

Fossil Fuel Subsidy and Pricing Policies

Recent Developing Country Experience

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Abstract

The steep decline in the world oil price in the last quarter of 2014 slashed fuel price subsidies. Several governments responded by announcing that they would remove subsidies for one or more fuels and move to market-based pricing with full cost recovery. Other governments took advantage of low world prices to increase taxes and other charges on fuels. However, the decision to move to cost recovery and market prices, ending budgetary support, has not been implemented consistently across countries. Policy announcements have varied in the way they were communicated and the level of detail provided. When petroleum product prices bounced back during the first half of 2015, some “reforming” governments failed to raise prices correspondingly.

Recent experience suggests that regular and frequent price adjustments, however small—as in Jordan and Morocco—help the government and consumers to get accustomed to fluctuations in world fuel prices and exchange rates. By contrast, freezing prices, even for a few months—for socioeconomic considerations or because the needed adjustments are small enough to be absorbed—increases the risk of reversion to ad hoc pricing and price subsidies. The more formally the decision to move to market-based pricing is communicated, the more public new price announcements, and the higher the frequency of price changes, the more likely the implementation of the announced pricing policy reform will be sustained.

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Fossil Fuel Subsidy and Pricing Policies: Recent Developing Country Experience

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Abbreviation

APEC	Asia-Pacific Economic Corporation
CEB	Ceylon Electricity Board
CIF	cost, insurance, and freight
CNE	Comisión Nacional de Energía (National Energy Commission)
CNG	compressed natural gas
CPC	Ceylon Petroleum Corporation
CSPH	Caisse de Stabilisation des Prix des Hydrocarbures (Hydrocarbon Price Stabilization Fund)
EEHC	Egyptian Electric Holding Company
EGPC	Egyptian General Petroleum Corporation
FEPC	Fondo de Estabilización de Precios de los Combustibles (Fuel Price Stabilization Fund)
FEPCO	Fondo de Estabilización de Precios de Combustibles Derivados de Petróleo (Petroleum Product Price Stabilization Fund)
FOB	free on board
FY	fiscal year
GDP	gross domestic product
HUS	Housing and Utility Subsidies
IEA	International Energy Agency
IMF	International Monetary Fund
kg	kilogram
kWh	kilowatt-hour(s)
LNG	liquefied natural gas
LPG	liquefied petroleum gas
m ³	cubic meter(s)
mcf	1,000 cubic feet
MEPCO	mecanismo de estabilización de precios de los combustibles (fuel price stabilization mechanism)
MERA	Malawi Energy Regulatory Authority
mmBtu	million British Thermal units
NDRC	National Development and Reform Commission
NNPC	Nigerian National Petroleum Corporation
OECD	Organisation for Economic Co-operation and Development
RON	research octane number
SURE-P	Subsidy Reinvestment and Empowerment Program
VAT	value added tax

Introduction

Global fossil fuel subsidies are large and have attracted arguments for and against them. Reasons cited for introducing and maintaining subsidies include reducing the adverse effects of global price volatility and inflationary pressure; encouraging the development of indigenous hydrocarbons by providing support to producers and helping to reduce import dependence or increase exports; increasing the economy's competitiveness by keeping input fuel prices low; making energy more affordable, especially to households, with the possibility of avoiding depletion of biomass resources and reducing the harmful effects caused by pollutant emissions from traditional use of solid fuels; and, in countries with plentiful domestic hydrocarbon resources, taking advantage of production costs that are lower than the global market prices to enable the economy to benefit from low government-controlled fuel prices. Some forms of fossil fuel subsidies sharply target the poor without distorting end-user prices, such as household energy assistance programs for low-income families that are prevalent in high-income members of the Organisation for Economic Co-operation and Development (OECD) and that are emerging in developing countries.

While these justifications for fossil fuel subsidies may be reasonable or even equitable under certain circumstances, implementation of many subsidy schemes has not proven cost-effective for achieving the policy objectives set. There is now ample evidence that generalized subsidies—which are popular, easy to introduce, but difficult to dismantle—are inefficient and inequitable (see, for example, Arze del Granado, Coady, and Gillingham 2012). They also lead to illegal diversion and commercial malpractice, especially when liquid fuels are subsidized (Kojima 2009, 2013a).

There are many types of subsidies, and a comprehensive examination of various types in the energy sector is rare, even in high-income OECD countries, which arguably have the largest database. The most common method for measuring subsidies is the so-called price-gap approach, which quantifies the gap between free-market reference prices and the prices charged to consumers. The gap can be viewed as a subsidy provided to consumers when the gap is positive and that provided to producers when the gap is negative, but usually only positive gaps are identified for fossil fuels and reported as subsidies. Another is the inventory approach, which constructs an inventory of government actions benefiting production and consumption of the subsidized good. The two methods are complementary and should ideally be used together. Price gaps cause distortions throughout the economy and quantification is needed for improving pricing policies. Price gaps, however, miss many forms of subsidies that do not affect the market price of the commodity measurably. An inventory is useful for examining budgetary allocation and can be made to capture almost all forms of support. For example, an inventory based on a full accounting framework for producer and consumer support estimates reflects price gaps as market transfers to producers or consumers (Kojima and Koplow 2015).

Quantification of subsidies in the energy sector to date in developing countries has relied largely on price gaps, providing a lower bound. And yet even this limited quantification of subsidies points to the very large scale of global fossil fuel subsidies. For the last several years the International Energy Agency (IEA) has used the price-gap approach to identify countries that provide significant subsidies to fossil fuel consumption, covering oil, gas, coal, and electricity. Since 2007, with the exception of 2009, oil has accounted for more than half of the total subsidies so calculated. In 2008 and 2011–2013, when the

world oil price was high, total global fossil fuel subsidies exceeded US\$500 billion, with oil accounting for about US\$300 billion, gas and electricity accounting for more than US\$100 billion each, and coal making a negligible contribution (see figure 9.1 in IEA 2014). The IEA estimates that global fossil fuel subsidies fell to US\$493 billion in 2014, and that the total would have been US\$117 billion higher without the reforms that had taken place since 2009 (IEA 2015).

Subsidies identified by the price-gap approach are disproportionately concentrated outside high-income OECD countries. For this reason, the IEA's list of subsidizing countries does not include any OECD member other than Mexico. Not all of the price gaps are paid for by the government budget: upstream oil and gas producers in some countries are required to sell hydrocarbons to domestic consumers at prices that are far below the opportunity cost, and in a handful of cases even below the cost of production. Non-OECD net oil exporters, current or historical, are far more likely to subsidize oil and gas than countries that are net importers (see table 8 in Kojima 2012).

By contrast, OECD member countries do not provide generalized price subsidies as identified by the price-gap approach, and instead provide producer subsidies or targeted conditional cash transfers (or their equivalent) without lowering end-user prices measurably. The OECD database, *Inventory of Support Measures for Fossil Fuels*, and its companion report (OECD 2015) provide detailed qualitative and quantitative data in a consistent manner for measures that support the production or use of fossil fuels in the 34 OECD member countries and six large emerging economies (Brazil, China, India, Indonesia, the Russian Federation, and South Africa). About two-thirds of the reported support measures take the form of tax expenditures, such as tax reductions or exemptions, accelerated depreciation and capital allowances, and royalty concessions in upstream oil and gas. Another widespread form of support reported by the OECD is energy assistance programs for the poor. Tax reductions for fuels used in agriculture, fisheries, and other targeted industries are common (although tax rebates for fuels serving as intermediate goods would be justified under certain conditions). Austria, Finland, Germany, Poland, Slovenia, Sweden, and Switzerland give relief to industries that are intensive users of coal, oil, or gas.²

Two recent publications, both appearing in 2013, reviewed the global experience with energy subsidy reforms in developing countries. Clements et al. (2013) examined 22 countries with 28 reform episodes up to 2012, and Vagliasindi (2013) examined 20 countries up to 2013. The criteria for country selection included data availability, regional coverage, hydrocarbon trade status, income, and different reform outcomes. To sustain reform, Clements et al. recommended a comprehensive reform plan, a communication strategy, transparency, appropriately phased and sequenced price increases, steps to improve the efficiency of state-owned energy companies, well-targeted social protection measures for the poor, and depoliticization of pricing (for example, by relying on a transparent fuel-setting

² Such tax concessions discourage the drive for energy efficiency improvement and diversification. Such concessions raise even more questions when intensive users of fossil fuels pay lower taxes on carbon dioxide emissions—or are exempted altogether, as in Slovenia, Sweden (for peat), and Switzerland (OECD 2013). To the extent that tax concessions apply to those sectors already covered by the EU Emissions Trading System, some tax reductions are justified. However, the trading system has been suffering from a surplus of free tradable permits and years of very low prices, limiting the size of justifiable tax reductions. Further, some countries and industries with reductions or exemptions are not participating in the trading system, making it difficult to justify any tax reduction in such cases.

mechanism based on rules); Vagliasindi recommended strengthened social safety nets, targeted subsidies, one-off compensatory measures, and broader sectoral reforms. More recent reform steps are briefly summarized in IEA (2015), which describes drivers for subsidy reforms—budgetary pressure, low international energy prices, peer pressure, policy advice and technical assistance, and loan conditionality—without detailed analysis of factors contributing to sustainability of reforms.

Regions and countries covered in recent publications analyzing fossil fuel subsidy reforms in the developing world include the Gulf Cooperation Council, with specific analysis of potential effects on inflation and near-term and long-term growth (IMF 2015I); Bangladesh (Mujeri, Chowdhury, and Siban Shahana 2014), with suggested priority actions; the Arab Republic of Egypt, with a focus on the July 2014 price increases (James 2015); and Peru (APEC 2015), as part of the peer review process for the Asia-Pacific Economic Corporation (APEC).

This paper takes more recent data—covering reform measures through the end of 2015—and examines fossil fuel subsidies in developing countries, where price subsidies persist. For this reason, it focuses largely on pricing policies. Covering the period until the end of 2015 enables assessment of reform measures announced at the end of 2014 and beginning of 2015, and reporting of new reform measures announced at the end of 2015, as governments put forward the 2016 budget proposals. The paper asks the following questions:

- Has the recent fall in world oil and natural gas prices led to more pricing reforms?
- Have reform announcements been followed by consistent implementation?
- Are governments addressing the pitfalls of price controls and how?
- Are governments with subsidies behaving differently from the way they did in 2008–2009, when the world oil price fell similarly?
- What characterizes policies and implementation that seem to sustain reform efforts?

This paper updates a previous publication that traced the evolution of pricing policies for petroleum products from 2009 to 2013 (Kojima 2013a), and expands the scope to include natural gas. Because several countries have taken advantage of low world oil prices to raise taxes and levies on fuels, fuel tax increases are also covered. Subsidies in the power sector are common and fossil fuels may be sources of power generation; as such subsidies in the power sector are also discussed to the extent applicable.³

The paper uses publicly available information—including government price surveys and price announcements, laws, regulations, decrees, decisions, press releases, data on government websites, annual reports of ministries and central banks, and reports issued by oil companies—to answer the first four questions, with preference given to government sources wherever they are available. As such, the degree of detail available is an indication of the transparency of pricing and subsidy policies. At the same

³ One difficulty is attribution. Subsidies in the power sector arise for a number of reasons, of which not fully covering fuel costs is only one. If subsidies are needed because aggregate losses (technical, commercial, collection) are far in excess of any reasonable benchmark, labeling the subsidies as fossil fuel subsidies may not be appropriate. If, on the other hand, subsidies have arisen primarily because of much higher fuel purchase costs—for example, having to rely far more on fuel oil and diesel because of a drought-induced drop in hydropower generation or because of gas supply interruptions—it would be reasonable to classify such subsidies as fossil fuel subsidies.

time, relying on publicly available data does not enable a systematic examination of pricing policies, which is a limitation of this study. The paper draws lessons from the international experience to date to provide insights into the last policy question. While each is very important in its own right, and they are touched upon, this paper is not intended to deal with distributional analysis of subsidies and pricing policies, compensation measures, social protection, or political economy analysis. However, it is not possible to treat fuel subsidies while avoiding political economy issues altogether. They are mentioned where relevant, but this paper does not analyze stakeholder mapping, the depth of support or opposition to subsidy reforms among the stakeholders, and how to overcome political economy challenges. Options for protecting the vulnerable in countries that choose to phase out fossil fuel subsidies is treated in detail in a paper prepared for the Group of 20 (World Bank 2014a).

The paper begins by providing the global context. A discussion of global fuel price movement is followed by comparison of domestic prices across several dozen countries. It next describes, and provides recent examples of, the pitfalls of price controls—market distortions, market concentration, disincentives for investment, and market abuses—providing examples from recent experience, including how some governments have attempted to deal with these pitfalls. The paper next contrasts responses of different governments over the past year, draws lessons where appropriate, and ends with concluding observations. The paper has a detailed annex on the recent developments in 35 developing countries to provide supporting evidence.

Global Context

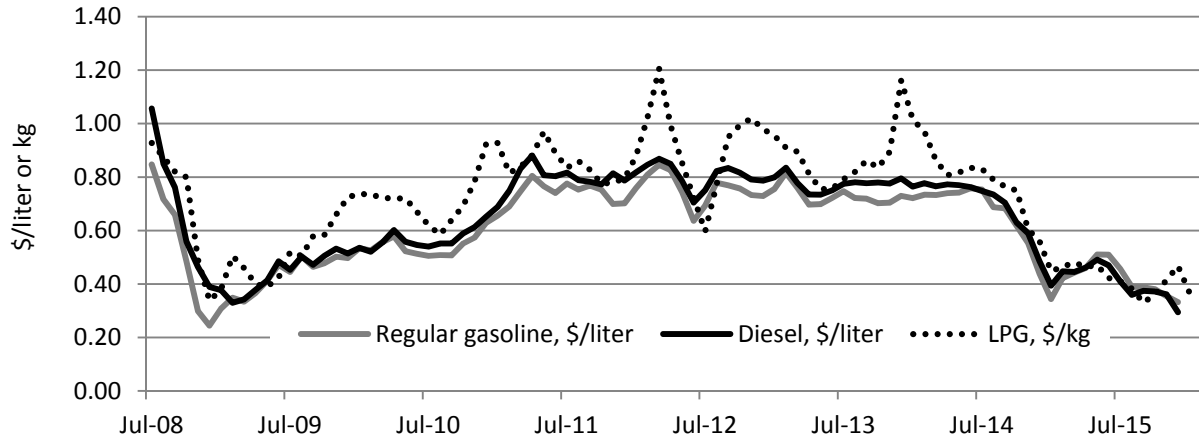
After averaging more than US\$100 a barrel for three consecutive years from 2011 to 2013, the world crude oil price fell sharply in the last three months of 2014 and reached the lowest level since 2009 in January 2015. The price rebounded during the first half of the year, but by December fell even lower than in January 2015 and, on average, than in December 2008 (the lowest point in the last downward cycle that began in 2008).

The price of oil is an important determinant of the size of fossil fuel subsidies, given the weight of oil subsidies in the total and the fact that oil, gas, and coal prices tend to move together. The world oil price movement during the last four years has meant that a number of countries with price controls faced mounting price subsidies financed by the government until the last quarter of 2014. The sharp decline in the oil price in late 2014 slashed price subsidies. But price subsidies persist, especially among current or past hydrocarbon exporters such as Algeria, Angola, Bolivia, Cameroon, Ecuador, Egypt, Islamic Republic of Iran, Nigeria, and República Bolivariana de Venezuela. Others have been faced with larger fuel bills because of droughts requiring substitution of hydropower with oil-based power, or loss of relatively inexpensive gas supplies, such as Jordan (a substantial reduction in gas supplies from Egypt) and Nigeria's neighbors (much lower gas volume in the West Africa Gas Pipeline supplying Benin, Togo, and Ghana).

Figure 1 shows the evolution of free-on-board (FOB) prices of gasoline, diesel, and liquefied petroleum gas (LPG) since July 2008. LPG prices have been more volatile than other liquid fuel in recent years. Figure 1, however, gives an incomplete picture because currency fluctuations also affect the economic cost of oil in each country. Between January 2014 and April 2015, the price of Brent crude oil fell by 45 percent, but the price decrease was less in local currency in 87 percent of all countries, less than 20

percent in five countries, and the price actually increased in Ukrainian hryvnia. To arrive at end-user prices, the costs of transportation, storage, and sale; taxes and fees; and profits must be added to the prices shown in Figure 1. The additional costs are especially high for LPG, which is expensive to store and transport because LPG needs to be liquefied under pressure at all times or else refrigerated (for example, for long-distance shipping).

Figure 1: Monthly average FOB prices of gasoline, diesel, and LPG



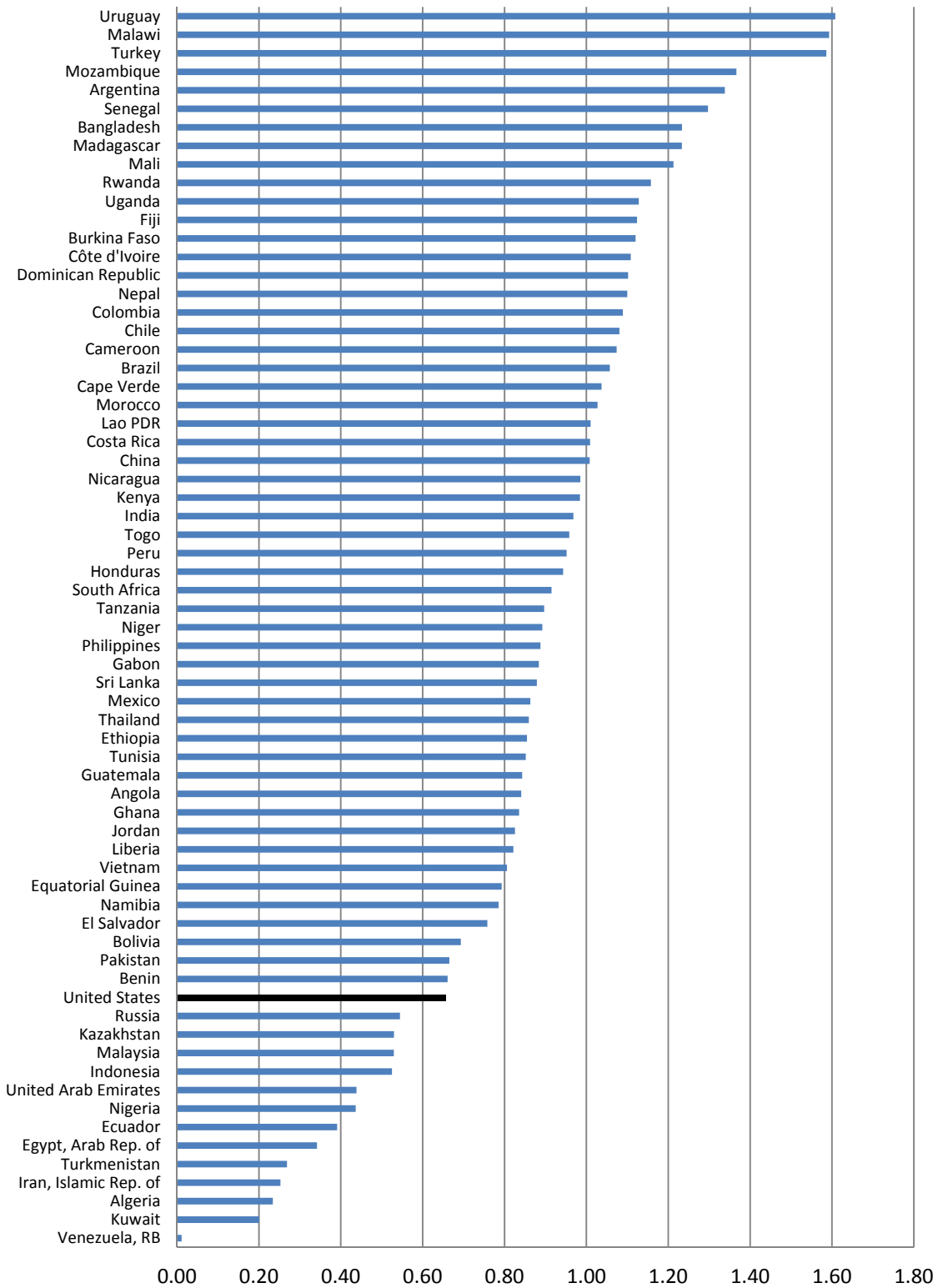
Sources: Industry sources.

Note: The prices of gasoline (92 research octane number) and diesel (0.05-percent sulfur) are from Singapore. LPG prices are average Saudi Aramco contract prices for propane and butane. Kerosene prices are not shown because they track diesel prices closely.

End-user prices for gasoline, diesel, kerosene, and LPG span a wide range. Including República Bolivariana de Venezuela, the end-user prices of gasoline and diesel differ by more than 100-fold, giving an indication of the scale of price subsidies in some parts of the world. Retail fuel prices in March 2015 are shown in Figure 2–Figure 5.⁴ For gasoline and diesel, the national average price in the United States is highlighted because of the country’s low costs of supply (large economies of scale and high operational efficiency due to competition) and low taxes (excise taxes have been frozen since 1993 in nominal terms). It is important to interpret the data with caution because these prices are not directly comparable due to differences in taxes and other costs.

⁴ Where prices vary by location and national averages are not available, the prices in the capital city are shown. For the United Arab Emirates, the price of diesel is that in Abu Dhabi. The diesel price in Northern Emirates was much higher at US\$0.94 per liter.

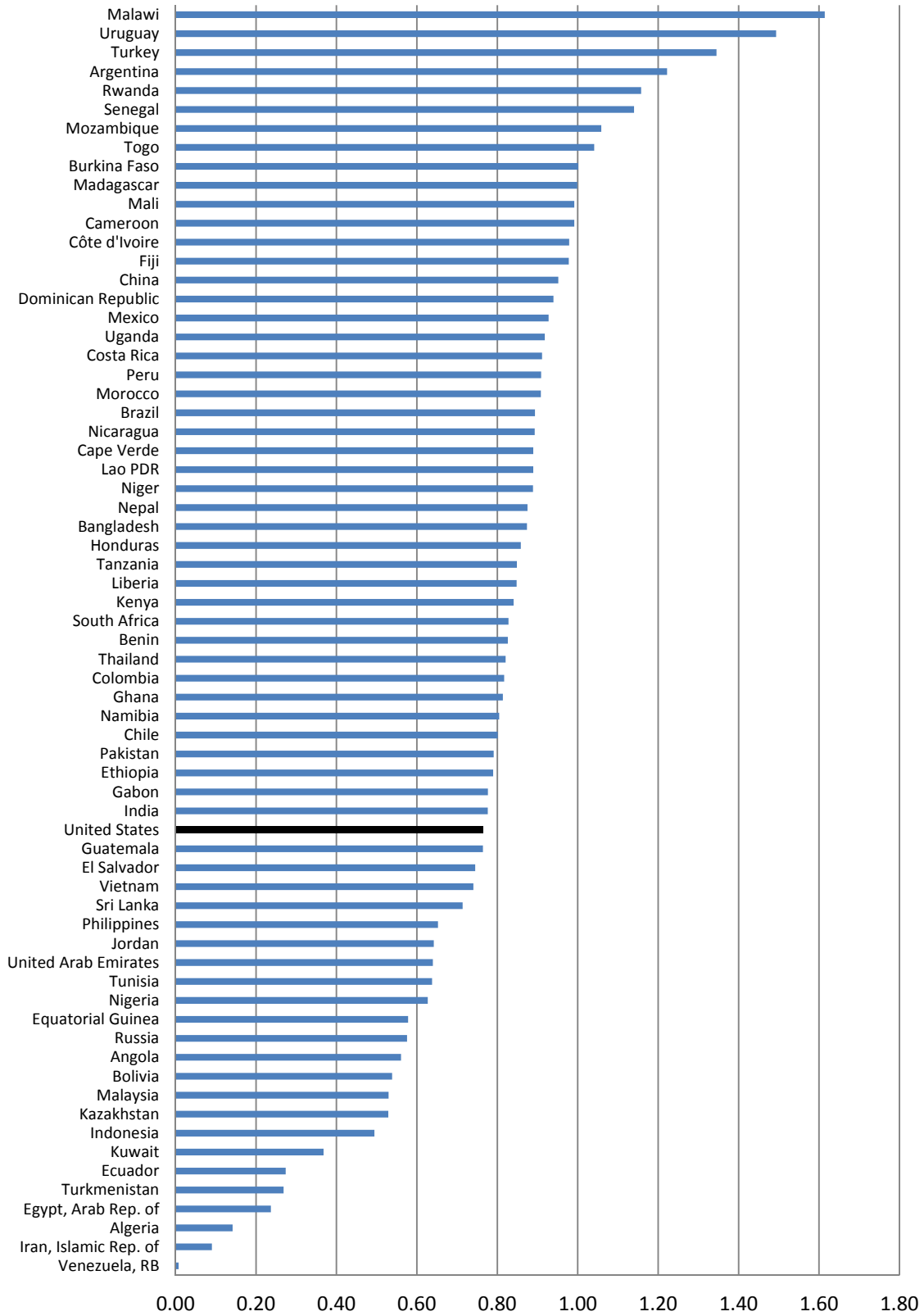
Figure 2: Retail prices of regular gasoline in March 2015 (US\$/liter)



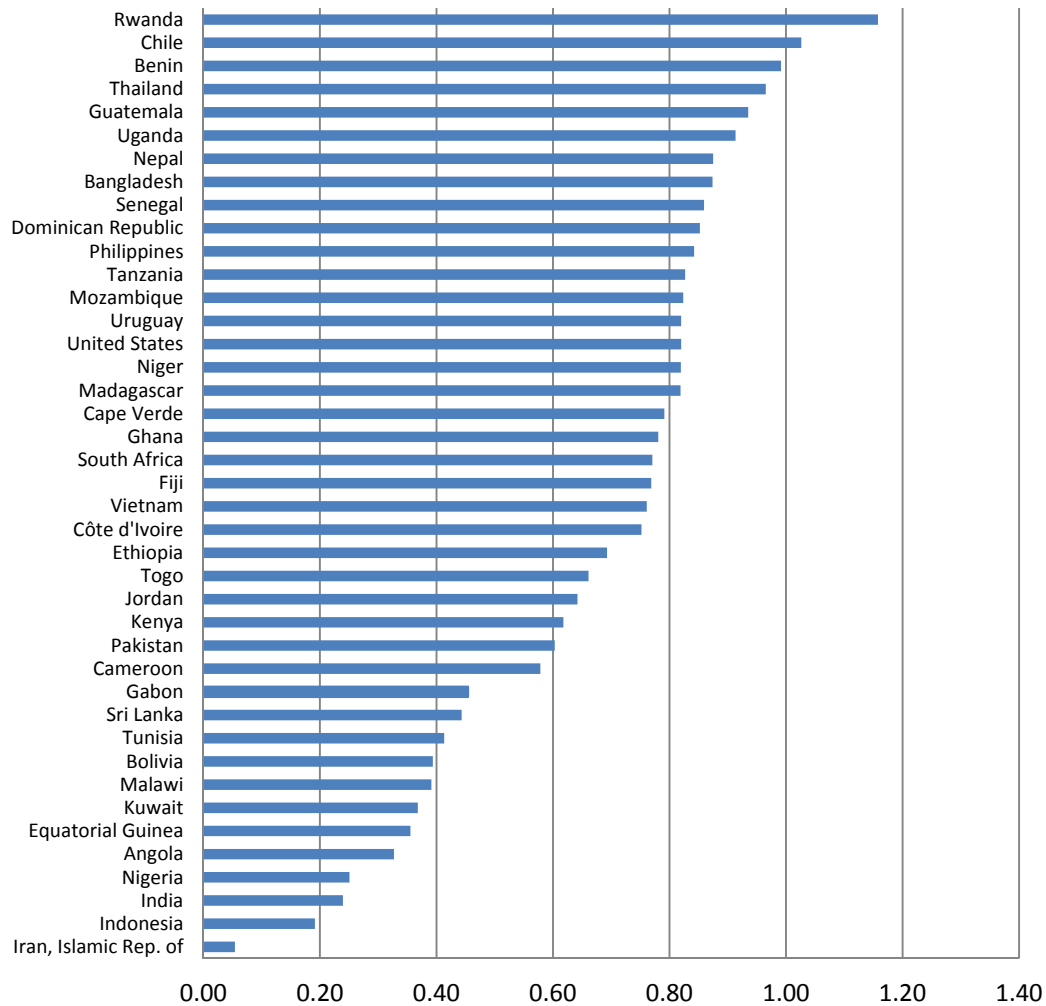
Sources: Government websites, local news articles.

Note: The research octane number (RON) is 90–93 for regular gasoline but some countries have only higher octane grades, typically 95 (Algeria, Malaysia, Tunisia). The RON is 88 in Indonesia, and 80 in Bangladesh.

Figure 3: Retail diesel prices in March 2015 (US\$/liter)

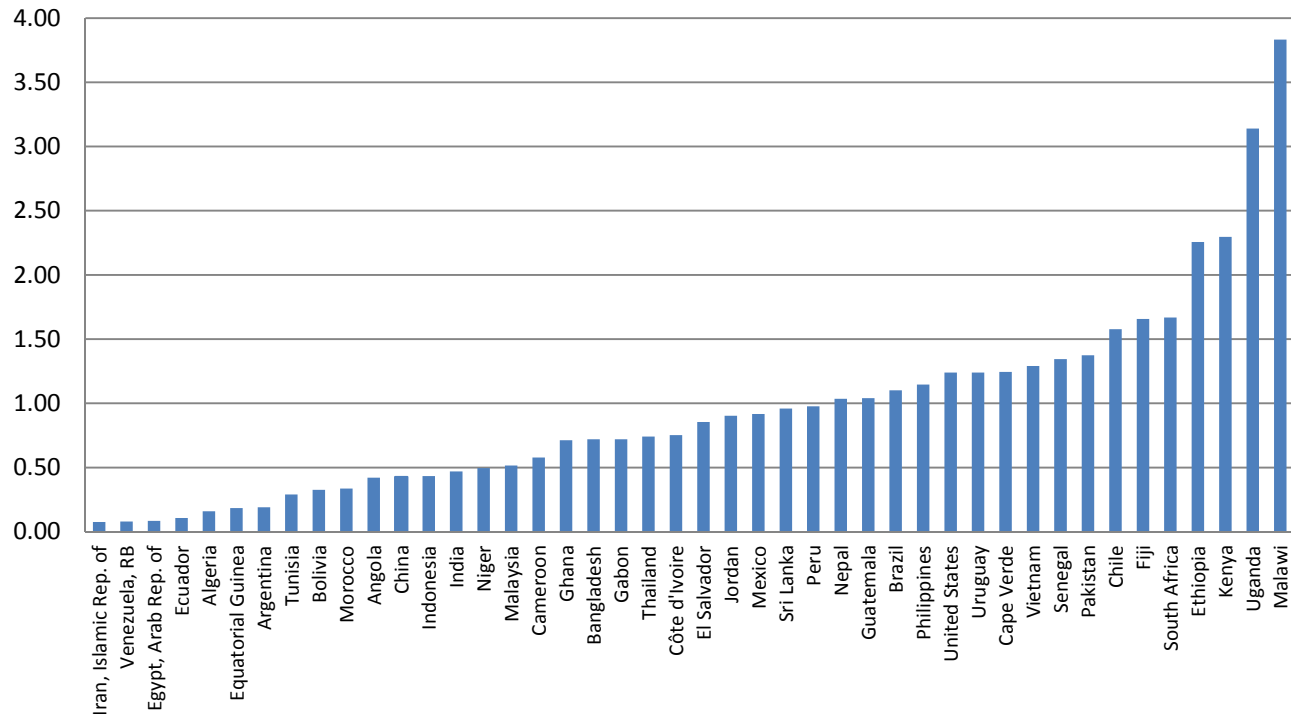


Sources: Government websites, local news articles.

Figure 4: Retail kerosene prices in March 2015 (US\$/liter)

Sources: Government websites and announcements, local news articles.

Notes: The prices are for kerosene for household use where available. There are fewer countries in this figure than in those for gasoline and diesel, in part because kerosene is not commonly used as a household fuel in a number of countries, several of which have large price subsidies for LPG, which displaces kerosene. For Malawi, the Malawi Energy Regulatory Authority (MERA) in April 2014 stopped publishing the price of domestic kerosene. As of April 2014, the price of domestic kerosene was less than one-fourth of the price of industrial kerosene and had been frozen at that low price since a new automatic pricing mechanism was implemented in July 2012. In a list of historical prices announced by MERA through February 2015, MERA labels kerosene prices as those for “paraffin – industry” (MERA 2015a). In the absence of an official announcement from MERA that the heavily subsidized price of domestic kerosene had been eliminated, this paper assumes that the price in March 2015 was the same as that in April 2014.

Figure 5: Retail LPG prices in March 2015 (US\$/kg)

Sources: Government websites and announcements, local news articles.

Notes: Prices are for LPG sold in 10–15-kg cylinders, except 3-kg cylinders in Indonesia and Morocco which are commonly used cylinder sizes for subsidized LPG for household use, 6-kg cylinders in Cape Verde and Senegal, and 18-kg cylinders in Malabo in Equatorial Guinea. The price of LPG shown for Argentina is the subsidized price for the poor. The price for China is the price for LPG sold in 15-kg cylinders for use by households in Beijing, with a limit on purchase at this price.

The caveat in the previous paragraph notwithstanding, the differences in end-user prices for the same fuel are far greater than what can be explained by differences in taxes and costs alone. The low prices arise because of price controls in many countries. There is little consistent pattern by country: pricing policy is not only country-specific but also fuel-specific. Only a few countries subsidize every fuel, and they are all major oil exporters. It is more common for a country to have deregulated prices for a few fuels (such as jet fuel) or consumers (mining companies, for example), cost-reflective controlled prices for a few others, and an ad-hoc pricing policy for one or two fuels (say household LPG) carrying subsidies. Box 1 provides some considerations for and observations on liquid fuel prices and pricing.

Box 1: Pricing of liquid fuels

The long-term goal in most countries with price controls is deregulation of liquid fuel prices in a competitive market with effective enforcement of sound technical, environmental, health, and safety regulations. In such markets, efficient operators would flourish and, importantly, efficiency gains would be passed onto consumers in the form of lower prices. One exception is pipeline transportation of liquid fuels, which is a natural monopoly and requires economic regulation.

Government regulation and enforcement are critical to ensure that consumers benefit from the lowest prices possible enabled by competition, while adequate standards are maintained. Short-selling (rigging pumps and

other measurement instruments to sell less than what is advertised) and mislabeling of quality (selling low octane gasoline as high octane, fuel adulteration) are two most common means of defrauding consumers; they raise the effective prices paid by consumers. Many governments require fuel retail outlets to post prices in some easily readable and accessible fashion, such as the display of pump prices that are clearly visible from the road.

Spot prices of gasoline, kerosene, and diesel are broadly comparable and similar in major refining centers across the world. Absent large differences in taxes and subsidies, retail prices would also be similar. LPG prices diverge more from region to region because LPG is more costly to transport and store.

Taxes on petroleum products are a critical source of government revenue. This is because taxing fuel is one of the easiest ways to raise revenue: collecting fuel taxes is easier than collecting income and other taxes, and the consumption of fuels as a group is weakly price elastic but strongly income elastic, ensuring buoyant revenue as income rises and tax rates are increased (Bacon 2001).

A fundamental principle of tax theory is that taxes should be levied on final consumption goods rather than intermediate goods, except where the tax accounts for externalities. Diesel is an intermediate good in many applications, and in some markets taxes on diesel are rebated or diesel as an intermediate good is sold separately at lower prices. This provides an avenue for financial gains for those prepared to engage in commercial malpractice, such as taking partially taxed or untaxed diesel and using it in a fully taxed market. Setting up a system for rebate can entail a considerable administrative burden. In Australia, for example, about 700,000 firms and individuals receive fuel tax credits, including those in mining, agriculture, fisheries, forestry, and transport (Australian Taxation Office 2014). The portion of fuel tax intended to account for externalities—a tax on the carbon content of a fuel being an example—should not be rebated even if it is levied on intermediate goods. Because household fuels are final consumption goods, tax theory suggests that they are not eligible for tax rebate or waiver.

Some markets do not yet have sufficient competition. Price deregulation in the absence of adequate competition carries a serious risk of high prices charged to consumers. Under such circumstances, the government may feel compelled to regulate prices. There are several policy questions:

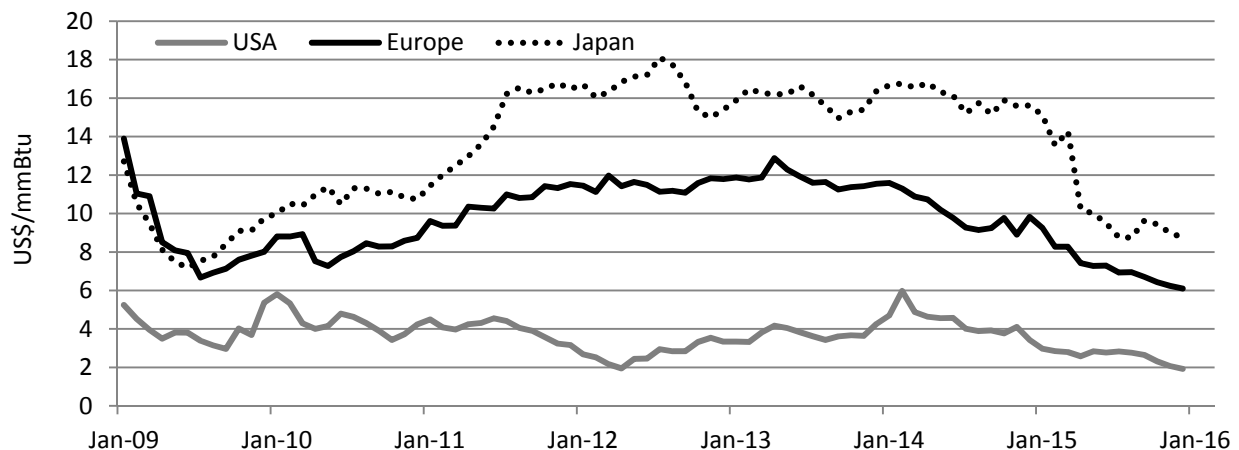
- *Wholesale or retail.* If there is only one company controlling all refineries and imports but there are numerous retailers, the logical place to control prices is wholesale. If two vertically integrated companies control the entire supply chain down to filling stations, retail prices would need to be regulated.
- *Price caps or price levels.* Price caps applied at wholesale or retail, rather than regulation of price levels, allow for price competition, where deviations from the maximum allowable prices signal the degree of competition.
- *Uniform price or differentiation by location.* The larger the area covered by a single price, the easier it is to monitor compliance but the greater the degree of government intervention and the less cost-reflective the price. In the extreme, a uniform price throughout a country with a wide range of transportation costs would require settling transportation cost differences, opening up a new channel for more regulatory intervention, illegal financial gains, or both.
- *Frequency of price adjustment.* Prices are usually adjusted at time intervals ranging from weekly to monthly. The longer the period covered by a price announcement, the more stable the prices but also the greater the probability of large price changes when they are made and the larger the fiscal consequences.
- *Time period covered for reference price.* A detailed study of the transmission of world oil price changes in 12 EU countries found that it took about 3–6 weeks for 90 percent of the changes in ex-refinery prices to reach end-users (Meyler 2009). This time lag observed in competitive, deregulated markets suggests that reference prices should be taken from a month ago or even earlier in developing countries—that is, prices on March 1 may be built up from world prices prevailing on February 1 or earlier. Another issue is the

averaging period. The longer the period over which reference prices are averaged, the smoother the price but the larger the departure from cost recovery, potentially leading to large financing gaps.

Turning to natural gas, there are three distinct global markets—North America, Europe, and Asia—driven by fundamentally different factors. Natural gas is more expensive to store and transport than oil, making international trade in natural gas costly. As a result, only 30 percent of natural gas consumed globally crossed national borders in 2014, about two-thirds by pipeline and one-third as liquefied natural gas (LNG), against 62 percent for oil (BP 2015). This lack of trade explains the persistence of distinct gas markets to this day.

With the exception of North America, natural gas prices have also fallen substantially, especially in Asia where gas prices are indexed to oil prices. Figure 6 shows the evolution of natural gas prices in the three major markets. Since mid-2009, Asia has had the highest natural gas prices, followed by Europe, and finally North America, although in February 2015, spot prices for LNG in Asia fell to US\$6–7 per million British thermal units (mmBtu),⁵ lower than the prices in Europe (*LNG Intelligence* 2015). North America is the only one of the three markets in which gas prices are delinked from oil prices, there is gas-to-gas competition, prices are determined by supply and demand in spot trading, and gas production is rapidly expanding.

Figure 6: Monthly average natural gas prices



Source: World Bank.

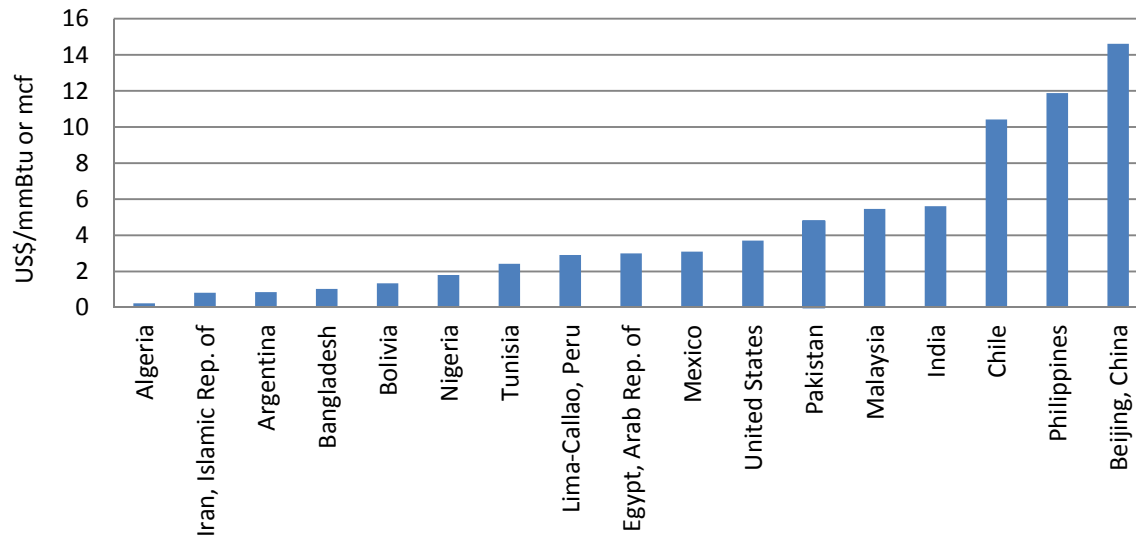
Notes: USA = spot price at Henry Hub, Louisiana; Europe = import border price with a spot price component; Japan = import price.

End-user natural gas prices also span a wide range across countries, differing by more than 50-fold for gas supplied for power generation, an important consumer of natural gas (Figure 7). Because prices paid by large consumers are often bilaterally negotiated, information is not readily available except where prices are published by the government or utility companies. As such, the prices shown in the figure

⁵ In this paper, prices are shown per mmBtu (energy unit) or thousand cubic feet (mcf), depending on the pricing in that particular market. In the abbreviation, m stands for 10^3 and mm for 10^6 . Although conversion from a volumetric unit to an energy unit depends on the energy content of the specific gas, for the purposes of this paper, mmBtu and mcf are considered interchangeable. Where prices are per cubic meter (m^3) in a market, they are converted to prices per mcf.

should not be considered representative but only illustrative of publicly available information. Nevertheless, it is clear that prices in many countries are below market-linked price levels, and in some countries below production costs. A reasonable lower bound is the price in the United States, which has the lowest spot price among the global markets, and an extensive and well-developed network of pipelines linking consumers to producers. Box 2 gives some background information on gas pricing.

Figure 7: Examples of prices of natural gas for power generation in March 2015



Sources: Government and utility websites and announcements, local news articles.

Notes: For Mexico and the United States, the prices shown are those averaged across all power producers purchasing natural gas in March 2015. For Algeria, it is the transfer price for natural gas for electricity generation. For Chile, the price shown is that charged to large industrial consumers consuming natural gas equivalent to that needed in a 500-megawatt combined cycle power generation plant.

Box 2: Pricing of natural gas

Gas pipeline transportation is a natural monopoly, requiring economic regulation in every market. Pipeline tariffs are set in a way similar to how electricity transmission tariffs are set.

Where natural gas is imported or exported, trade-parity prices can serve as the basis for constructing reference prices. Otherwise, prices of alternative sources of energy, or the cost of production combined with risk-adjusted rate of return may be the starting point.

In countries with significant domestic natural gas production, it is not unusual for the government to regulate domestic natural gas prices at levels markedly lower than export-parity prices but without using budgetary transfers to compensate gas producers. Because gas producers would then rather export gas than sell to domestic consumers, it is common for the government to impose a domestic supply obligation, making an export license contingent on meeting the supply obligation. Depending on how unattractive the regulated domestic prices are, such price caps could slow development of the gas sector in general and of nonassociated gas (gas associated with oil production, which could be flared) in particular. This could even lead to serious gas shortages, as in Nigeria. Another cause of stagnating or declining gas production is poor payment discipline. Power tariff subsidies make many power utilities financially insolvent, and the utilities lacking creditworthiness cannot pay on time for gas, if at all, even when gas prices are kept artificially low.

Metering of each customer makes it easier to provide targeted subsidies for natural gas than for liquid fuels. Using rising block tariffs, lifeline rates may be offered for the first block, although one political challenge is to keep the block relatively small so as not to subsidize richer households disproportionately. Certain industries—most commonly fertilizer manufacturers—tend to be subsidized heavily for political rather than economic reasons.

Commercial and collection losses are more common with natural gas than with liquid fuels. These arise from meter tampering, lack of metering, inaccurate metering, under-billing, late payments, and non-payment. These losses reduce effective prices paid by the consumers benefiting from the losses and worsen the financial health of the gas suppliers. Unpaid bills can amount to billions of dollars. Raising prices to cover these losses means those paying in full are cross-subsidizing those not paying for some or all of their consumption.

This discussion on prices paid by consumers is not complete without mentioning that some governments officially provide *free* fuels to select consumers to this day. In Egypt, the state-owned Egyptian General Petroleum Corporation (EGPC) receives free crude oil and natural gas as part of production sharing contracts. The power sector in Côte d'Ivoire receives subsidized fuel through two channels. One is free gas based on the government's 15-percent equity share in domestic gas fields, amounting to an estimated 0.9 percent of gross domestic product (GDP) in 2011 (IMF 2012b). The other is subsidized heavy vacuum oil provided by the oil refinery to the utility. In Angola, free diesel provided to the power sector was estimated to amount to 1.3 percent of GDP (IMF 2015a). Turkmenistan provides free natural gas, electricity, and water to households. The deadline for their phase-out has been extended twice and is now scheduled for 2030. Under this scheme, households are entitled to 25 kilowatt-hours (kWh) of free electricity and 50 m³ (1.8 mcf) of free natural gas per person per month. Outside of the quota, the price of natural gas is a mere US\$0.025 per mcf, which is less than 1 percent of the economic cost of gas. Turkmenistan used to provide free transportation fuels, but in July 2012 canceled their provision for use in large trucks and buses, and in September 2013 terminated the supply of free gasoline to car owners.

Pitfalls of Price Controls

Price controls of one or more fuels continue in a number of developing countries, either de jure or de facto. Many do not have clear rules and formulae for setting prices, or else the principle on paper of market-based pricing with full cost recovery is not followed in practice. Examples of countries with ad-hoc pricing, or with pricing formulae (or price deregulation) that are not implemented, are shown in Table 1 for liquid fuels.

Fuel price controls present numerous challenges: setting prices requires detailed location- and market-specific information about the cost structure; government control of prices invariably politicizes price setting; and using price controls to moderate the effects on inflation creates many other problems, ranging from market concentration to corruption.

Table 1: Examples of de jure or de facto discretionary control of liquid fuel prices

Fuel	Countries
Gasoline	Algeria, Bangladesh, Bolivia, Brazil, Cameroon, Ecuador, Arab Republic of Egypt, Gabon, Indonesia, Islamic Republic of Iran, Kazakhstan, Kuwait, Malawi, Niger, Nigeria, Saudi Arabia, Senegal, Sri Lanka, Tunisia, Turkmenistan, Vietnam, República Bolivariana de Venezuela, Zambia
Diesel	Algeria, Angola, Bangladesh, Bolivia, Brazil, Cameroon, Côte d'Ivoire, Ecuador, Arab Republic of Egypt, Gabon, Indonesia, Islamic Republic of Iran, Kuwait, Malawi, Kazakhstan, Niger, Saudi Arabia, Senegal, Sri Lanka, Tunisia, Turkmenistan, Vietnam, República Bolivariana de Venezuela, Zambia
Kerosene	Algeria, Angola, Bangladesh, Bolivia, Cameroon, Côte d'Ivoire, Ecuador, Arab Republic of Egypt, Gabon, India, Indonesia, Islamic Republic of Iran, Kuwait, Malawi, Niger, Nigeria, Saudi Arabia, Senegal, Sri Lanka, Tunisia, Vietnam, República Bolivariana de Venezuela, Zambia
LPG	Algeria, Angola, Argentina, Bangladesh, Bolivia, Brazil, Côte d'Ivoire, Ecuador, Arab Republic of Egypt, Gabon, Indonesia, Islamic Republic of Iran, Malawi, Malaysia, Morocco, Niger, Senegal, Thailand, Tunisia, República Bolivariana de Venezuela

Sources: Government and oil company websites, government announcements, and news reports.

Note: Appearance in this table means that the government exercises discretionary control over the price for at least one consumer category or fuel grade. For LPG in Thailand, for example, the government has frozen the price of LPG for poor households and micro-businesses. If the government reimburses consumers or marketers without setting official subsidized prices for sale to end users (such as LPG for households in India and Peru), they do not appear in this table. A country appears in this table if implementation of a fuel pricing formula has been subject to socioeconomic considerations, such as in Indonesia and Malawi.

Estimating price subsidies to reimburse fuel marketers is challenging

The amount of information needed to set prices can be substantial, and how to share the cost components becomes a political decision. Some costs are specific to that market and require local data collection, such as transportation costs for delivering fuels to different parts of the country, allowable losses (from evaporative emissions or leaks), or days of wharfage considered reasonable in importing fuels. When cost information is being sought from fuel suppliers to determine subsidy reimbursement, those marketing fuels could very well cite the high rather than the low end of the cost range. If costs are high because the market is inefficient, the government has to consider the extent to which it is prepared to provide price support to producers to compensate them for their inefficiency in the near (if not medium) term, given inefficiency cannot be eliminated overnight. Domestic refineries that cannot compete with imports represent one example. To avoid a fiscal outlay, several governments protect domestic refineries through higher import duties on refined products than crude oil, restrictions on imports, or a requirement for oil marketing companies to source a portion of their supplies from the (high-cost) domestic refineries, effectively forcing consumers to pay more.

Input subsidies add to the estimation challenges. For example, Algeria and Tunisia provide subsidized domestic crude oil to refineries. The price of the crude in Algeria is set in Executive Decree 07-60 issued in February 2007, and there are two prices depending on the refinery. These prices have been below the equivalent of US\$25 per barrel, signaling substantial price subsidies. The price of crude for the sole refinery in Tunisia has been lower than the equivalent of US\$40 a barrel. Such input subsidies obscure the transparency and governance of the refinery operations, and exclude participation of the private sector in the supply chain, thereby reducing or eliminating competition. The Tunisian refinery exports

naphtha and fuel oil and imports gasoline, diesel, LPG, and other products, further obscuring costs and revenues.

To address poor transparency due to input subsidies, governments are increasingly moving away from subsidizing fuels used to generate electricity to consolidating subsidies in the power sector (the examples of Angola and Côte d'Ivoire above notwithstanding). For example, the Government of Indonesia no longer provides subsidized fuel oil and diesel fuel to the state-owned utility. Previously budgetary transfers were made to Pertamina, the national oil company, to compensate it for providing subsidized fuels to the state power utility, but now the utility pays market prices for fuels and subsidy reimbursements are made to the utility. Such a move makes subsidy delivery to the power sector more transparent.

Pricing control could concentrate market power

Price subsidies for liquid fuels are frequently channeled through national oil companies and other state-owned energy enterprises, granting them a monopoly status. One reason for confining subsidy delivery to state-owned companies is the ease of administration. Another is the belief that state-owned companies exist for the benefit of the people and hence subsidies, which are intended to benefit citizens, should not be entrusted to private companies driven by profit maximization. Yet another is that long delays in subsidy reimbursements are common, and governments can lean on state-owned companies to absorb financial losses more easily than on private companies. In some cases companies are not reimbursed and are expected to shoulder the burden of subsidies; examples include subsidies provided by Petrobras of Brazil for petroleum products; Oil and Natural Gas Corporation, Oil India, and GAIL (India) for crude and petroleum products; and PTT Public Company Limited of Thailand for automotive natural gas.

Reliance on state-owned energy companies may also continue because other state enterprises and government agencies find it easier to accumulate payment arrears to state-owned energy suppliers than to private operators, with serious financial consequences. In Egypt, outstanding payments owed are among the factors plaguing the state-owned Egyptian Electric Holding Company (EEHC) and Egyptian General Petroleum Corporation (EGPC). The EEHC owes payments to the EGPC; in total, public utilities owe 90 percent of the EGPC's outstanding receivables. Another example is the Ceylon Petroleum Corporation (CPC) in Sri Lanka, a state-owned oil company. The CPC was able to retire SLRs 26 billion (US\$200 million) of debts owed to it by two state-owned airlines in the first quarter of 2014 only after the latter two companies had been recapitalized by the government (MFP 2015). The CPC has had to borrow (heavily) from state banks, crowding out private sector investments. Inefficiency is multiplied because these loans are not financing productive activities. The Central Bank of Sri Lanka has highlighted the economic harm caused by state-owned energy companies' heavy borrowings from state-owned banks, diverting limited funds away from more productive investments (CBSL 2014). Alternatively, the government—despite itself contributing to the problem—may feel compelled to bail out the energy company eventually. The scheme for Financial Restructuring of State Distribution Companies in India and the Nigerian Electricity Market Stabilisation Facility, discussed in the annex, are two examples of government bailout.

Even if the government announces that price subsidies will be or have been eliminated, private companies may be reluctant to enter the market for a variety of reasons. The pricing policy eliminating subsidies may be vaguely written, unproven, or have an escape clause allowing for socioeconomic considerations to over-ride the principle of cost recovery (as in Gabon and Indonesia). There may also be a (legitimate) fear that state-owned energy companies will one day come under political pressure to set artificially low prices without an official re-introduction of price subsidies, making it impossible for other companies to compete on a commercial basis (as in Brazil).

The end result is a market dominated by one or a handful of national oil companies. Examples include Algeria, Angola, Brazil, China, Cameroon, Comoros, Ecuador, India, Indonesia, the Islamic Republic of Iran, Mexico, Nigeria, Nepal, and República Bolivariana de Venezuela. In Indonesia, the Islamic Republic of Iran, Mexico, and Nigeria, every refinery in the country is owned by the national oil company, while in Brazil Petrobras controls 99 percent of the total refining capacity. Competition in refining is especially challenging because of large upfront capital requirements, which non-state investors would not be prepared to undertake as long as price controls remain. Unless there is vigorous competition from imports, wholesale competition does not exist. Without competition, economic regulation becomes necessary, compelling the government to continue its involvement in price setting and perpetuating the politicization of the fuel pricing policy as well as high market concentration. Once there is a dominant player, it is difficult to reduce its market power. The barriers to entry are especially large for major infrastructure, such as refineries, pipelines, and import terminals.

Channeling price subsidies through national oil companies also obscures corporate governance. While the performance of national oil companies spans a wide spectrum, many are in need of serious reform, and political interference slows down the reform process. Subsidies make it more difficult to assess the commercial performance of a national oil company, because losses due to inefficiency are blurred with losses from subsidies. Even the size of the subsidies becomes difficult to quantify, because costs are often self-reported by the company, obscuring the distinction between reasonably and prudently incurred costs on the one hand and inefficiently incurred costs on the other.

In some cases the burden of price subsidies is not borne entirely by the budget but is absorbed by national oil companies through financial losses (such as Petrobras in Brazil and state-owned oil and gas companies in India). Because doing so reduces the direct fiscal cost, these subsidies are not subject to annual budget reviews, potentially making it more difficult to end them. The artificially low prices make it difficult, if not impossible, for competitors to enter the market and grow their market share.

Aiming for price stability could backfire

Price stability may be politically expedient and popular, but all too often forces large adjustments later. Two examples of years of frozen prices followed by large price increases are those in December 2010 and April 2014 in the Islamic Republic of Iran and price increases in July 2014 in Egypt. Examples of more modest but nevertheless relatively large one-off price increases include gasoline and diesel price increases in Indonesia in June 2013 and November 2014, and the LPG price and power tariff increases in Ghana in 2013.

Wishing to retain popular support, it is not uncommon for governments to rule out price increases as far back as a year or even longer, or lower prices, before national elections. Elections in Argentina in 2013 and Thailand in 2011 were widely rumored to be one of the reasons for freezing the price of diesel in the months leading up to the elections in these countries.

Where governments are eventually forced to implement large price increases, they make subsidy reform and price shocks synonymous and foster resistance to pricing reforms. Arguably one of the most dramatic examples is the aftermath of the very large price increases in April 1996 in República Bolivariana de Venezuela: 820 percent for regular gasoline and 890 percent for diesel. The riots that followed left hundreds dead, and the government has frozen prices for nearly two decades, partly for fear of a repeat. More recently, nearly equally large price increases in the Islamic Republic of Iran in December 2010 were responsible in part for the amendment to the Targeted Subsidies Reform Act two years later, partially reversing the subsidy reform policy. After freezing prices for more than three years, the Iranian government implemented another round of large price increases—although not nearly to the same degree—in April 2014, but did not eliminate subsidies by the end of 2015 as envisaged in the Targeted Subsidies Reform Act. Ghana increased the price of LPG by 50 percent in February 2013 and electricity tariffs by 78.9 percent in October 2013. While the price of LPG was deregulated in 2015, in the power sector, the government has not kept up with cost increases and currency depreciation since. One recent example is an 80-percent increase in the diesel price in Angola in January 2016.

Price smoothing schemes are seldom, if ever, self-financing

The idea of charging more when world fuel prices are low and using the savings to subsidize prices when world fuel prices are high has an intuitive appeal. It suggests the possibility that the government can moderate the transmission of world price volatility to the domestic market at little or no budgetary cost. The basic idea is to have a floor and a ceiling for the domestic price. When the world price is low, the difference between the market-based price and the floor (over-recovery) is set aside. The savings so accumulated are used to subsidize domestic prices when the market-based price exceeds the ceiling (under-recovery). Cameroon, Chile, Colombia, Gabon, Peru, Thailand, and Vietnam have oil funds that have been used to smooth world price volatility.

The premise of such a scheme being self-financing rests critically on oil prices reverting to a mean on a fairly regular basis, so that under-recoveries are followed by over-recoveries frequently. If, instead, there are long periods of steady price increases or high prices, punctuated by periodic price collapses, there would be long periods of a growing deficit, which has to be paid for by other means.

The movement of the price level in recent years indicates that a mean-reversion model—one postulating that prices always return toward the same value in a reasonable amount of time—would be inadequate to describe the general behavior of oil prices (Bacon and Kojima 2008). Oil prices have not followed a pattern of fluctuations around a mean for about 15 years, forcing governments with price stabilization funds to transfer billions of dollars to the funds. Yet persistent belief in reversion to a mean has prompted launching of “temporary” stabilization funds, which have not proven to be so temporary:

- Chile established its first price stabilization fund in 1991 when the world oil price rose sharply in the aftermath of the first Persian Gulf War. The fund had been depleted by 2004, just as oil prices began to rise. The government established FEPCO (Fondo de Estabilización de Precios de

Combustibles Derivados de Petróleo, Petroleum Product Price Stabilization Fund) in September 2005 as a second fund, intending to retire it by June 2006. The subsequent world price movement forced the government to transfer US\$0.7 billion to FEPCO and keep operating it until August 2010 (Kojima 2009, 2013a).

- The Government of Peru set up Fondo de Estabilización de Precios de los Combustibles (FEPC, Fuel Price Stabilization Fund) in May 2004, when benchmark gasoline and diesel prices soared from their December 2003 levels by about 35 percent and 50 percent, respectively. Budgetary transfers were repeatedly made to FEPC, totaling US\$2.5 billion by the end of 2011 (Kojima 2013a). No additional transfers have been made since.

Political pressures can build to tap into a price stabilization fund when it is accumulating a large surplus. Because a surplus is far more likely when oil prices fall, this could result in a counter-intuitive scenario in which money is withdrawn from the fund to subsidize prices when world prices are already low, and conversely levies are charged when world prices are high because of a growing deficit in the fund. This scenario has in fact played out in Vietnam. When crude prices were above US\$100 per barrel in February and March of 2014, a standard fund levy of VND 300 (US\$0.014) per liter was charged for each fuel with no withdrawal from the fund. In February 2015, after the world oil price had halved, there were large net outflows from the fund to lower prices further, by as much as US\$0.11 per liter for a gasoline (BCT-TTTN No. 1337). The fund balance reached an all-time high of US\$188 million on December 31, 2014, but fell successively in the next two quarters to US\$132 million by the end of March 2015 and further to US\$82 million by the end of June—halving in value despite low world prices—before rising to US\$123 million at the end of September (Vietnam 2015a–c). These developments have meant in practice that the stabilization fund has amplified, rather than reduced, price volatility.

More generally, even when it is abundantly clear that a stabilization fund is not self-financing, its presence slows down subsidy reform. That there is a possibility—however remote—of the fund balance recovering strengthens the hand of those wanting to preserve subsidies, in the hope that the future will be different from the past. The more formal the set-up for price stabilization, the greater the challenges to removing it. Cameroon set up Caisse de Stabilisation des Prix des Hydrocarbures (Hydrocarbon Price Stabilization Fund, CSPH) in May 1974. It is a regulatory agency with legal status and financial autonomy with a mission to regulate petroleum prices in all parts of Cameroon. The government had adopted a price-setting formula, which came into effect in January 2008, but the formula was not used for more than a month before being abandoned, largely on account of violent street protests against higher fuel prices and more generally higher costs of living, exacerbated by the president's proposal to amend the constitution to remove term limits. In subsequent years, the CSPH ended up freezing fuel prices between January 2009 and June 2014, as a result of which its deficit grew steadily from 2009 to 2013, reaching 2.8 percent of GDP in 2013.

The weight of evidence from international experience is that costs far outweigh the benefits of price stabilization through a fund, and countries with such funds are increasingly moving away from them. Peru and Chile provide two illustrations.

Peru's FEPC was reviewed in detail in 2014 as part of the Asia-Pacific Economic Cooperation's peer review of fossil fuel subsidies (APEC 2015). The review concluded that the costs of FEPC likely far outweighed the marginal benefits in reducing inflation. Given subsequent changes made to FEPC, with

most petroleum products dropped from it, the review concluded that retiring FEPC completely was unlikely to have any significant effects on inflation.

After two decades of experience with two stabilization funds, Chile has all but abandoned the policy of stabilizing prices using a fund. The first fund established in 1991 is now very small, dedicated only to kerosene for household use with a fund balance of a mere US\$1.4 million in December 2014 (<http://www.cne.cl>), while the second fund has been closed down. The government has instead turned to a specific fuel tax to reduce price volatility. The tax scheme smooths the prices of automotive fuels (gasoline, diesel, LPG, and natural gas) for small and medium users. The tax consists of a fixed component and a variable component. The government adjusts the variable component to achieve price smoothing, while the fixed component is adjusted only for inflation every month at a rate announced by the Central Bank of Chile. The calculation procedures are clearly spelled out in the regulatory framework and all the parameters needed to carry out the calculations are posted on a government website every week, enabling anyone to reproduce the calculations. The tax scheme itself has undergone some changes, and the most recent formulation has been in effect since August 2014. There is a limit to the deficit that can arise from successive weeks of negative variable components, and the formula for setting the variable component is designed to limit the deficit.

Reimbursement delays for government-financed, artificially low domestic prices are common

One problem with subsidies delivered through price gaps financed by the budget is that the government runs out of money, causing frequent delays in reimbursing companies for subsidies. These delays increase borrowing costs as well as cause late payments by fuel importers to their suppliers. In extreme cases fuel importers cease to be creditworthy and find it difficult to contract exporters prepared to sell them fuels, as in Egypt, or else oil companies stop importing, as in Nigeria. Either way, reimbursement delays cause fuel shortages. Shortages of liquid fuels almost always push up prices on black markets.

Payment arrears also mean that the government continues to pay for subsidies long after they are eliminated or reduced. In Nigeria, in the face of continuing gasoline shortages due to the refusal of oil marketers to release gasoline citing payment arrears, the government agreed to pay ₦407 billion (US\$2.1 billion) for late reimbursements in mid-December 2015, in the same month in which the world oil price fell to the lowest level in years.

Payment arrears for reimbursement of subsidies make it more difficult to attract investment in the sector, leading to declining fuel supply. To the extent that the market cannot attract new entrants, the market power of the national oil company is entrenched further.

Trade restrictions to influence prices distort the market further

Trade restrictions have been used to protect inefficient domestic fuel suppliers (producer support), or discourage exports and increase domestic supplies with artificially low domestic prices controlled by the government (consumer support). Either way, the market distortions created lead to inefficient allocation of resources and, in the case of trade restrictions providing consumer support, underinvestment in the energy sector and even acute fuel shortages.

For liquid fuels, trade restrictions take the form of high export tariffs or export bans (consumer support), or high import tariffs (producer support). Kazakhstan has had a continual ban on exports of various refined products since 2010, which began as a temporary ban during the planting and harvesting season, to prevent fuel shortages. Argentina and Bolivia have used very high export duties on crude oil to keep domestic prices low, although more recently Argentina began subsidizing oil production by offering high prices as incentives for oil producers. Vietnam has frequently adjusted import duties—the “standard” rates of which were historically 35 percent for most fuels and 30 percent for diesel—as a means of smoothing oil price volatility. Zambia uses import duties on petroleum products in part to protect its sole state-owned refinery, effectively providing producer support. Russia has a formula for computing export duties, which are high and intended to keep domestic prices low and increase domestic supplies. In October 2013, the export duties were US\$374.70 per tonne of gasoline (about US\$44 per barrel) and US\$274.80 per tonne of diesel (US\$37 per barrel). In 2015, they have been about one-third to one-fifth of the values in October 2013. The duties set for September 2015, for example, were about US\$10 a barrel for gasoline and US\$7 for diesel, and by January 2016 fell further to US\$44.70 per tonne (US\$5.30 per barrel) and US\$29.30 per tonne (US\$3.95 a barrel), respectively. The consequent low domestic prices have historically discouraged investment in refineries, forcing the government to postpone the introduction of tighter fuel specifications repeatedly (Kojima 2013a).

For natural gas, trade restrictions usually take the form of domestic supply obligations coupled with low domestic prices set by the government, driven in turn by subsidies in other sectors. All too frequently the domestic prices are too low to encourage gas exploration, development, and production, leading to gas shortages despite domestic supply obligations. The need to keep domestic gas prices artificially low in turn arises from subsidies for electricity and a few other industries, which typically include fertilizer manufacture as a means of subsidizing agriculture. This compounding of subsidies leads to multiple problems. The subsidized fertilizer and power sectors are often inefficient—fertilizers that can barely compete with imports, and a power sector with large aggregate technical, nontechnical, and collection losses—or else fertilizers are exported. Nigeria, which ranks ninth globally in gas reserves (*Oil and Gas Journal* 2014), has been suffering from acute gas shortages for years, stranding power generation capacity. Not being able to generate and sell electricity means the general financial situation of power generation companies, already weak from power subsidies, is weakened even more. The ability of the power sector to pay gas producers is further reduced, resulting in large payment arrears and even lower gas production, perpetuating this vicious cycle. Frustrated by continuing gas shortages, some power generation companies and even fertilizer manufacturers have opted for willing-buyer/willing-seller arrangements, paying much higher prices than the official prices.

Trade restrictions do not necessarily benefit the intended beneficiaries. Between 1975 and December 2015, crude oil exports from the United States had been largely banned to curb upward pressure on domestic oil prices. In recent years, this widened the price difference between West Texas Intermediate (U.S. benchmark crude) and Brent (a European benchmark crude). However, consumers do not buy and consume crude oil; they consume refined products. The prices of refined products in turn are set by market forces based on regional and global supply and demand. As a result, this ban on crude oil exports by the U.S. government benefitted largely refineries and not consumers. Another example is fertilizer manufacture in Nigeria. The price of natural gas for fertilizer manufacturers is only US\$1/mmBtu, but

some manufacturers take advantage of this low price to export fertilizers rather than supply the domestic market to benefit local farmers.

Subsidies all too often create powerful incentives for commercial malpractice

Setting different prices for the same fuel depending on use, large price differences between substitutable fuels, and large price differences across neighboring countries provide powerful financial incentives for commercial malpractice. Common examples are adulteration of higher-priced fuel with lower-priced fuel (such as adding kerosene to diesel); flourishing black markets combined with shortages of fuels sold at official prices to make purchase of subsidized fuels difficult, (much) higher actual prices paid by consumers, or both (examples being kerosene in India and Nigeria, and LPG in Egypt); and smuggling of fuels to neighboring countries (from Algeria, Indonesia, the Islamic Republic of Iran, Malaysia, Nigeria, and República Bolivariana de Venezuela to their neighbors). The archipelagos of Indonesia and Malaysia make it easy to use boats for fuel smuggling. This has posed special challenges to monitoring fuel subsidies provided to fishing vessels—fuel smuggling may be far more profitable than fishing. The Government of Malaysia in August 2012 even announced that a representative of the Malaysian Fisheries Development Authority would in the future verify each catch landed, and those with insufficient catch would no longer be permitted to buy lower-priced fuel (*Borneo Post* 2012).

Some governments have tightened border controls to combat out-smuggling due to low domestic prices, but without significant or lasting effects. Although data on fuel smuggling are difficult to obtain, the Government of Malaysia is reported as estimating that 3.5 billion liters a year (60,000 barrels per day) of diesel and 6 billion liters per year (100,000 barrels per day) of gasoline were being smuggled out of the country (*Platts Oilgram Price Report* 2014). In May 2014, the government launched an operation jointly conducted by the police, Customs Department, the Malaysian Maritime Enforcement Agency, the Malaysian Anti-Corruption Commission, and local councils to curb fuel smuggling. While the government moved gasoline and diesel to a “managed float” pricing system in December 2014 and ended price subsidies, fuel prices in Malaysia remain much lower than those in neighboring countries on account of tax differences, thereby continuing to provide incentives for smuggling. One of the most extreme measures taken to combat fuel smuggling is the nightly closure of the border between Colombia and República Bolivariana de Venezuela, which in August 2015 turned into an indefinite closure after a state of emergency was declared. The cost of border patrol adds to the already very large price subsidies for petroleum products in República Bolivariana de Venezuela.

Price controls have caused fuel shortages, which create black markets and push up effective prices paid. Periodic fuel shortages are common in countries with price subsidies in part because of diversion of subsidized fuels to alternative markets and in many cases also because of the delays in subsidy reimbursement payments by the government. In Nigeria, the National Bureau of Statistics reports that gasoline shortages in November 2015 pushed up the actual prices paid in one state to ₦187.5 (US\$0.94) per liter, more than double the official price of ₦87 (US\$0.44) per liter and much higher than the price that would have prevailed without subsidies in a deregulated market. Another consumer survey conducted by NOI Polls in Nigeria in March 2015 found that 90 percent of gasoline purchasers paid on average 31 percent more than the official subsidized price, and in the northeast region of the country, more than if the price of gasoline had not been subsidized (NOIPolls 2015). The fuel shortages that pushed up black-market prices started in this case when fuel marketers charged that the government

had owed them US\$1 billion for subsidy reimbursement. Kerosene is more heavily subsidized than gasoline on paper, but the actual retail prices are routinely double to triple the official price and not just in times of acute shortages (PwC 2015). Kazakhstan has also had periodic fuel shortages due to price controls and trade restrictions.

A large price difference between two substitutable fuels is a leading cause of corruption. Premix in Ghana provides an example. Premix is gasoline with low octane intended for fishing vessels, and has historically been priced half or less of gasoline. The financial incentives for diverting premix are so powerful that members of the National Premix Committee, set up to tackle illegal diversion, have themselves been accused of participating in commercial malpractice (GhanaWeb 2015a).

Adulteration of diesel with kerosene is one of the most common forms of commercial malpractice. The financial incentive is provided by the price of kerosene being lower than that of diesel, and the fact that a considerable amount—say 30 percent—can be added to automotive diesel without immediate detection. This is in contrast to adulteration of gasoline with kerosene, which is detected much more readily because even a 5-percent addition of kerosene to gasoline could lead to knocking. Of the 44 countries in Figure 4, kerosene prices were lower than diesel prices in 31, less than two-thirds of diesel prices in 12, and less than half in four. In India, where the price of subsidized kerosene intended for household use is one-third to one-fourth of the price of diesel, adulteration is rampant as well as well-organized, and several people who have tried to expose adulteration, including an investigative journalist, have been murdered (*Hindu* 2011; *Hindustan Times* 2011). For its 2015/16 budget, the Government of Tanzania proposed to increase the petroleum tax on kerosene by twice the amount as that for diesel in order to combat fuel adulteration, with the goal of using the extra revenue generated for rural electrification (Tanzania 2015). In Bangladesh, Jordan, and Nepal, kerosene and diesel prices are identical, eliminating this source of commercial practice. By contrast, Sri Lanka has substantially widened the price difference between kerosene and diesel in the past year.

The scope for commercial practice is even greater when the same fuel has multiple prices depending on the purchaser. Examples include LPG in Indonesia, where there is nearly a three-fold difference between LPG sold in 3-kg and 12-kg cylinders; kerosene for household use versus other uses in India and Malawi; and natural gas for residential versus other consumers in Ukraine, where gas for households is being diverted to industrial consumers facing higher tariffs. India is tackling diversion of subsidized LPG by implementing the Direct Benefits Transfer for LPG (DBTL) program. A price subsidy is no longer provided for household LPG, and instead cash equivalent to the subsidy is transferred directly to the bank accounts of registered participants. The Ministry of Petroleum and Natural Gas recently attributed the strong growth of bottled LPG for commercial and automotive uses to the DBTL's curbing of diversion of subsidized LPG (PPAC 2015).

Subsidized prices covered by the budget also provide opportunities for fraudulent claims. There are numerous ways of manipulating claimed costs, including false claims on the volume delivered, exchange rate manipulation, falsifying dates of the bills of lading, inflating storage and transportation costs, and falsifying the destination of fuel delivery (to claim longer distances). In extreme cases, companies with no import, storage, or distribution facilities have been known to claim subsidies for fuel imports and sale, as in Nigeria in 2011. A series of government-led investigations into suspicious claims made in

Nigeria in 2011 were not able to reconcile US\$1.5 billion of reimbursements to 50 companies and concluded that they were not legitimate (*All Africa* 2013).

Response to the Recent Fall in the World Oil Price

A prolonged period of low fuel prices offers opportunities for reducing market distortions and improving the government's fiscal position. Price subsidies can be reduced or eliminated without large adverse effects on the economy because price gaps have narrowed or even disappeared. Where prices are at cost-recovery levels, fuel taxes and other fees can be increased. These possibilities pertain especially to petroleum products, which are global commodities and therefore the prices of which are more directly linked to world spot prices than natural gas or coal. This section therefore focuses on petroleum products.

Major hydrocarbons producers, which derive a sizable portion of the government revenue from upstream oil and gas, have an added incentive to tackle subsidies in times of low world oil and gas prices. As mentioned above, these countries are more likely to offer large price subsidies than those relying heavily on hydrocarbon imports. When the world oil price is high, their subsidy bills are correspondingly high, but so is their oil income. When the world oil price is low, subsidy bills may be smaller, but their oil income is slashed even more, substantially weakening their fiscal position and therefore reducing the fiscal space for subsidies.

Lower world fuel prices have advanced pricing reforms

Several governments have announced the decision to eliminate price subsidies for certain petroleum products and to move to market-based pricing. There were several such announcements at the end of 2014 and the beginning of 2015. More announcements followed at the close of 2015, as governments considered 2016 budgets. By December 2015, the monthly average price of Brent crude had fallen to the lowest level since 2003 in real terms, and the price fell further in January 2016. Major oil producers saw their oil revenue decline sharply, reducing the fiscal space available for price subsidies—even as subsidies in absolute terms fell as the oil price slide continued—and prompting countries with low pump prices to announce large price increases to control government spending. Examples include the following:

- The budget adopted by the parliament in Algeria in November 2015 raised taxes on fuels and electricity. The finance minister in December 2015 announced that Algeria would follow Morocco in gradually reforming subsidies.
- Against the backdrop of falling world prices, Angola raised domestic prices in September and December 2014, and again in April 2015, at which time the government deregulated the price of gasoline and ended its price subsidy. An executive decree issued on December 30, 2015 raised the prices of kerosene and LPG and deregulated the price of diesel.
- Bahrain announced in December 2015 that it would raise the prices of diesel and kerosene to 120 fils (US\$0.32) per liter on January 1, 2016 and increase them by 20 fils (US\$0.05) per liter each year until January 1, 2019. Fuels supplied to bakeries and fishing boats were not subject to price increases. The price of kerosene and jet fuel had not been changed since 1983 and diesel

since 2008. The government added that gasoline subsidies would be tackled next but options were still being evaluated (*Energy Biz* 2015).

- China in October 2015 stated that by 2017 oil, gas, and electricity prices would be largely deregulated in the segments of the supply chain where competition is possible, and the government would fully implement market-driven pricing with economic regulation for natural monopolies and anti-trust elsewhere by 2020.
- Gabon announced in January 2015 that it was ending subsidies for gasoline and diesel, subject to socioeconomic considerations, while continuing to subsidize kerosene and LPG.
- Ghana lowered petroleum product prices in January 2015, raised them in May and June, and then announced in June 2015 that fuel prices (except for premix and residual fuel oil) would be deregulated no later than August.
- India ended the diesel price subsidy in October 2014 and moved to market-based pricing of LPG in the first half of 2015, replacing the price subsidy for 14.2-kg cylinders for household use with cash transfers to the bank accounts of registered LPG consumers.
- Indonesia issued regulations in December 2014 to end gasoline price subsidies and limit the diesel price subsidy to a maximum of Rp 1,000 (US\$0.08) per liter effective January 2015.
- Kazakhstan in September 2015 deregulated the prices of 92 RON and 93 RON gasoline, while continuing to set price ceilings for 80 RON gasoline and diesel.
- Malaysia in December 2014 abolished price subsidies for 95 RON gasoline (the subsidy for 97 RON gasoline had been abolished in 2010) and diesel, moving them to a managed float mechanism whereby costs from the previous month are used to set the fuel prices every month.
- Mexico in its historic hydrocarbons law of August 2014 committed to basing gasoline and diesel pricing on market principles starting on January 1, 2018. Citing the continuing low oil price, the finance ministry proposed in September 2015 that the date be moved forward to 2016.
- Morocco in December 2014 announced that it was ending price subsidies (except for LPG) and would be adjusting prices twice a month from January to November 2015, after which prices would be deregulated.
- Oman announced in December 2014 that it would move to market-based pricing of gasoline and diesel in mid-January 2016 as part of the government's fiscal reforms (Reuters 2015c).
- Saudi Arabia in December 2015 announced price increases for gasoline (67-percent for 91 RON and 50-percent increases 95 RON gasoline), electricity, and water, and the plan to set up an executive committee to launch a national program to review and rationalize energy and water prices (*Saudi Gazette* 2015).
- The Minister of Petroleum Resources Development in Sri Lanka in December 2015 confirmed to the parliament that a new pricing formula would be introduced in the first quarter of 2016, intended to achieve cost recovery.
- Tunisia in December 2015 announced that it would start applying a new automatic pricing mechanism in January 2016, with the first fuel price adjustments to be applied in July 2016.
- The United Arab Emirates announced in July 2015 that it would move to monthly adjustment of gasoline and diesel prices and eliminate their subsidies starting in August. New prices would be determined by a fuel price committee based on international prices and announced on the 28th of every month for the following month.

Some reform measures had started earlier, and the collapse of the world oil price made it easier to achieve the goals set. India, which had eliminated the gasoline subsidy in 2010, began raising the retail price of diesel by Rs 0.5 (US\$0.01) per liter every month in January 2013, with the goal of reaching cost recovery in due course and then deregulating its price. This approach to pricing was consistently implemented, and the government deregulated the diesel price in October 2014, earlier than planned. Thailand similarly increased the price of LPG in small increments, starting with LPG for industrial use in 2011, followed by automotive LPG in 2012, and finally residential LPG in 2013, merging the three prices in February 2015; the old subsidized price remains for low-income consumers and small-scale food vendors.

Unlike 2009, a number of governments with fuel subsidies this time have not lowered prices at the cost of retaining subsidies. The price collapse in late 2008 and early 2009 was equally dramatic, but several governments felt compelled to lower prices rather than take advantage of low world prices to embark on significant subsidy reforms. For example, between August and December 2008, Malaysia lowered gasoline and diesel prices seven times. By contrast, in 2014, Malaysia did not lower fuel prices until December, when gasoline and diesel subsidies were removed. Indonesia lowered gasoline prices three times and diesel prices twice between December 2008 and January 2009, but did not lower prices even once in 2014, and instead raised them in November (although the government lowered prices twice in succession in January 2015). Ghana decreased fuel prices four times in November and December of 2008, but only once this time, in January 2015. Between August 2008 and March 2009, Jordan decreased the diesel price 11 times and the gasoline price nine times. Jordan switched to a market-based monthly price adjustment mechanism in December 2012 and has adhered to it since. Between October 2008 and March 2009, Nepal lowered gasoline and diesel prices five times. In 2014 and 2015, Nepal did not lower the price of any fuel until each achieved cost recovery. Mozambique has not changed prices in 2015, using this period of low world prices instead to compensate for the mounting subsidies and fiscal costs incurred through 2014. One notable exception to the above pattern is Nigeria, which lowered the subsidized price of gasoline in January 2015 and retained the subsidy, a move widely perceived to have been politically motivated, given the national elections originally scheduled for February 2015.

Among those recently announcing pricing reforms, the level of detail about implementation has varied from country to country. An example of little detail being provided is Gabon. Aside from announcing subsidy removal, the government was silent about its pricing policy for gasoline and diesel—whether future prices would be based on a formula, how frequently prices would be adjusted, how different costs of supply by location would be taken into account, and so on. By contrast, the Government of Indonesia in a series of regulations specified both the pricing formulae and the frequency of price adjustments for gasoline and diesel.

In contrast to gasoline and diesel, pricing reforms for kerosene and LPG used by households—arguably two most socially sensitive fuels—are markedly rarer. Argentina and Peru have tightened eligibility requirements for LPG subsidies, and India switched from universal price subsidies to cash transfers on a voluntary basis, urging better-off households not to enroll in the scheme. Gabon, Indonesia, Malaysia, and Morocco have neither touched subsidized LPG prices nor tightened eligibility criteria. Subsidies for

household kerosene remain largely untouched. One exception is Ghana, which has deregulated the prices of both kerosene and LPG.

Implementation of price reforms has not been even

Many reform announcements were made in late 2014 and early 2015, largely about gasoline and diesel. Spot gasoline prices on the global market bounced back by half and diesel prices by a quarter between January and May 2015, testing the commitment of governments to pricing reform. Some stopped adjusting prices, while others have not adjusted prices at all. Uneven implementation is found in countries where the government continues to set prices that are supposed to be at cost-recovery levels determined by market prices and costs. By contrast, the decision to deregulate prices—and to stop all involvement in price-setting other than through anti-trust regulation—has been implemented consistently so far. Some examples follow.

Despite the announcement in January 2015 that gasoline and diesel subsidies were ended, Gabon has not adjusted their prices since 2009. In November 2015, the government—facing elections at the end of December 2016—said that fuel prices should have been increased but it was suspending the subsidy reform out of socioeconomic considerations and keeping the same prices in 2016. Indonesia’s new regulations require that gasoline and diesel prices be adjusted at least once a month, but they were adjusted only four times in 2015 (including two price reductions in January⁰, the last price changes made in March despite implied subsidies for gasoline. In September 2015, the government announced that the prices would remain the same, prices would be set only every three months beginning in January 2016, and the net deficit or surplus would be reconciled at the end of each fiscal year (FY). If there is a surplus, it could be transferred to the Energy Security Fund; in the event of a deficit, the government would “find a solution” (Indonesia 2015). In December 2015, the government announced that it would lower gasoline and diesel prices in January 2016, and levy small fees for the Energy Security Fund. Egypt failed to implement the fuel price increases planned for July 2015, and announced in December 2015 that at the end of the five-year subsidy program in 2019, 30 percent of the subsidy amount in 2014 would be retained.

Price deregulation in Angola for gasoline, most refined products in Ghana, and gasoline and diesel in India have not seen departure from the announced policy. That said, Brazil is an example of complete price deregulation on paper while price control has been implicitly exercised in recent years through pressure on Petrobras. Because price deregulation remains the official policy, subsidies are borne entirely by Petrobras, whose refining business has suffered billions of dollars of losses.

Frequency of price adjustments may be an indication of commitment to pricing reform

Spot prices of refined products varied by 40–50 percent during the first nine months of 2015, requiring frequent price adjustments had market prices been followed. The frequency of price adjustments may therefore signal the degree of commitment to pricing reform. Table 2 shows the number of times

domestic gasoline and diesel prices were adjusted during the first nine months of 2015⁶ in a sample of countries where the government controlled prices. The frequency varied from zero in several countries to 18 in Morocco.

Table 2: Frequency of gasoline and diesel price adjustments between January and September 2015 in select countries

Country	No.	Status
Algeria	0	Continuing price subsidies.
Angola	1	Gasoline deregulated in 2015; no price reduction for other fuels. Diesel supplied to the power sector is free.
Bangladesh	0	Prices frozen since Jan 2013.
Bolivia	0	Continuing price subsidies.
Cameroon	0	Automatic pricing mechanism for ex-refinery prices started and suspended in 2008. Prices last adjusted in June 2014.
China	15	Prices reviewed twice a month to set price ceilings. Prices were not changed three times.
Côte d'Ivoire	5	Automatic pricing mechanism for uniform ceilings in the country, with some discretion.
Ecuador	0	Continuing price subsidies. The price of super gasoline is permitted to float, but the prices of regular gasoline and diesel are subject to price ceilings, which have not been changed for more than a decade.
Egypt, Arab Rep.	0	Continuing price subsidies.
Gabon	0	Socioeconomic considerations to influence price setting. Price movement not consistent with the decision of the Council of Ministers in Jan 2015 to move to market-based pricing with full cost recovery.
Ghana	3	Prices deregulated in Jun 2015; price changes after Jun 2015 are not counted.
Indonesia	4	Socioeconomic considerations to influence price setting. New pricing policy not consistently implemented, with re-emergence of subsidies amounting to US\$1 billion by July 2015, borne by fuel marketers for now. Prices to be set only once every three months starting in January 2016.
Iran, Islamic Rep.	0	Continuing price subsidies, and missing the target date of 2015 for ending subsidies.
Jordan	9	Regular monthly adjustments.
Madagascar	2	Domestic price ceilings have been set since 2011. Subsidies have continued in 2015.
Malawi	3	Socioeconomic considerations have over-ridden pricing rules at times.
Malaysia	7	Managed float.
Morocco	18	Deregulated prices in December 2015.
Mozambique	0	Recovering past financial losses.
Nepal	7	Automatic pricing mechanism adopted in Sep 2014. Prices unchanged in May, June, and July because of the earthquake on April 25. Prices lowered only after eliminating under-recoveries.
Niger	0	After lowering prices in Jan 2012 and Jan 2013, prices frozen since.
Nigeria	1	Continuing gasoline price subsidy.

⁶ The first nine months are chosen rather than the whole year because world prices fell and rose during the period, once the time lags between FOB and retail prices are taken into account, whereas FOB prices fell steadily in the rest of the year, making it politically easier to adjust prices.

Country	No.	Status
Rwanda	4	Unusually, gasoline and diesel prices have been identical since Aug 2012. Price movement broadly in line with world prices.
Senegal	0	After a large price reduction in Dec 2014, prices were frozen in 2015.
Sri Lanka	1	Oil companies reported losses after the price reduction in Jan 2015. A plan to introduce a pricing formula has been delayed until 2016.
Tunisia	0	In 2012, 2013, and 2014, prices were raised once a year by about 7–8% each time. No price reduction.
Turkmenistan	1	Continuing price subsidies.
United Arab Emirates	2	Adjusting prices every month since August 2015.
Venezuela, RB	0	Continuing price subsidies.
Vietnam	16	Socioeconomic considerations have over-ridden pricing rules at times.
Zambia	3	Between the beginning of Jan 2015 and mid-Nov 2015, the kwacha halved in value, prices were lower in Nov than in Jan in local currency.

Sources: See annex.

Notes: No. = number of times prices were adjusted during the first nine months of 2015. For Angola and Nigeria, the frequency refers only to diesel and gasoline, respectively, because the other fuel is deregulated.

Of the 31 countries in Table 2, 13 did not adjust prices even once. Four of them—all major hydrocarbon producers—have frozen prices for years. República Bolivariana de Venezuela last increased gasoline prices in July 1997 and the diesel price in April 1996. Ecuador has frozen prices for 12 years. Algeria has not adjusted prices since 2007. Bolivia has not changed fuel prices for many years, except for a brief period in December 2010 when the government increased fuel prices by 60–80 percent but immediately canceled the price increases following widespread mass protests. Two more major hydrocarbon producers—Egypt and the Islamic Republic of Iran—have committed to subsidy elimination over five years in principle but have not yet issued a detailed plan with a full timetable. The Islamic Republic of Iran froze prices between December 2010 and June 2014 and has not adjusted prices since. Cameroon, an oil exporter, similarly froze prices between January 2009 and June 2014, when it last changed prices. Some of the remaining countries with no price adjustments have reduced subsidies or used over-recoveries to make up for past losses.

Three—all with heavy reliance on imported hydrocarbons—adhered to pricing policies based on cost recovery for gasoline and diesel during the first nine months of 2015. Jordan has been adjusting prices once a month. Both China and Morocco review prices twice a month and adjust as needed. Morocco changed the ex-refinery price of gasoline every time for a total of 18 times during the first nine months of 2015 and that of diesel after each review except on March 16 and June 1 for a total of 16 times. (Morocco, however, has frozen the price of LPG since the 1990s). China sets ceilings on wholesale and retail prices. During the first nine months of 2015, the ceilings on gasoline and diesel prices were not changed on March 12, May 25, and June 23. Others cited socioeconomic considerations to depart from their policies. Malawi and Vietnam cited consideration of effects on consumers to explain the decision not to raise prices—on several occasions in the case of Malawi—when the pricing formulae required price increases. In Indonesia, where a Supreme Court ruling has required consideration of socioeconomic factors in petroleum product pricing, the government in September 2015 for the first

time officially referred to averaging reference world prices over three, four, and six months. This signals a departure from the regulations and a move to price smoothing.

Lower fuel prices have created more space for increasing fuel taxes and other charges

Apart from standard value added tax (VAT) or general sales tax, fuel taxation is most common with petroleum products, especially gasoline and diesel. In OECD countries, transportation fuels account for about a quarter of total energy use but raise 85 percent of total excise tax revenue from energy products (OECD 2013). Similarly, largest taxes are usually levied on gasoline and diesel in developing countries. Taxes and subsidies can co-exist, as in Algeria, Colombia (in the past), India (in the past), and Indonesia. In such cases, the *net* subsidy for a given fuel can be negative (that is, taxes may outweigh subsidies).

Several governments have taken advantage of low world oil prices to increase fuel taxes and levies:

- In Algeria, the finance law of 2016, signed by the president in December 2015, raises the VAT on diesel, electricity (for consumption exceeding 250 kWh per quarter), and natural gas (for consumption exceeding 250 mmBtu per quarter) from 7 percent to 17 percent.
- China increased the excise tax on gasoline and diesel three times in succession between November 2014 and January 2015.
- Ghana introduced a new tax called a special petroleum levy in November 2014 for all fuels except premix and fuel oil. The tax is 17.5 percent of the ex-depot price.
- India increased the excise tax on gasoline and diesel three times in succession in the last three months of 2014. The cumulative increases were large, nearly tripling the tax on diesel.
- Mexico uses the special tax on production and services to smooth fuel prices. The tax was negative between mid-2009 and late 2014, but turned to sharply positive in 2015, rising to as high as US\$0.27 per liter of regular gasoline in February 2015, up from a subsidy of US\$0.28 per liter in April 2012. The unit subsidy for premium gasoline had been even higher, reaching US\$0.38 per liter in October 2012 (<http://sie.energia.gob.mx/>).
- Rwanda in July 2015 introduced a new levy of RF 32.78 (US\$0.045) per liter for gasoline and diesel to finance strategic fuel reserves and increased the road maintenance levy by RF 20 (US\$0.027) per liter.
- South Africa increased the fuel levy and the Road Accidents Fund levy in the 2015 budget, raising an additional US\$0.6 billion and US\$0.9 billion, respectively, over the next two years.
- Vietnam tripled the environmental protection tax in May 2015.

Although the fall in the price of oil was not the driver, Mexico introduced a carbon tax in January 2014; jet fuel is exempted. India doubled the clean energy levy on coal in July 2014, and doubled it again in 2015. Malaysia introduced a 6-percent tax on goods and services economy-wide in April 2015, but applied it only to gasoline with 97 RON, while exempting gasoline with 95 RON and diesel.

Observations

Some lessons emerge from the recent experience with pricing reforms for fuels with government control of prices (which may or may not signal the presence of subsidies, depending on the basis for the price levels or ceilings set).

First, the more formal the way in which the decision to reform subsidies is communicated, the less likely is policy reversal.

- Legislating the reform policy diminishes the ease of policy reversal. Changing a law requires an act of parliament, which is more difficult than changing regulations, which is usually subject to ministerial approval. Mexico wrote a subsidy removal timeline in its sector reform law. The Iranian parliament did change its reform law in 2012 in the face of growing opposition to subsidy reform, but there were extenuating circumstances, such as international sanctions leading to economic hardships, that went beyond subsidy reform. The pricing regulations in Indonesia abolishing the gasoline subsidy and limiting the diesel subsidy have been implemented unevenly, with price adjustments made only during the first three months of 2015.
- Changing regulations in turn is more difficult than reversing a press statement. In the gas sector in Nigeria, the Minister of Petroleum Resources in a meeting with press reporters in late 2014 announced the new gas price of US\$2.50 per mmBtu for power generation to come into effect in January 2015, but the new price has not been officially communicated, and was not implemented throughout 2015. Earlier, a June 2009 presidential directive abolishing the kerosene subsidy was first seemingly observed, but later the national oil company resumed the subsidy, and finally the validity of the directive was contested on the grounds that the decree had not been gazetted, leaving its legal status uncertain on paper and null and void in practice.
- There are other approaches. At the end of 2014 in Morocco, the government and fuel distributors signed a pricing accord, in which the government had committed to announcing ex-refinery prices of gasoline and diesel on the first and the sixteenth of every month between January and November 2015, with the goal of deregulating prices by December 2015. The government adhered to the terms of the accord strictly. The lowest announced prices occurred in the first half of February and the highest prices in June and July 2015, and prices were deregulated in December. In Gabon, gasoline and diesel price subsidy elimination was announced as a Presidential decision in a communiqué of the Council of Ministers, summarizing the outcome of a three-day government seminar in January 2015. However, the government has not adjusted retail gasoline and diesel prices at all, maintaining them at FCFA 535 (US\$0.90) and 430 (US\$0.72) per liter, respectively. In November 2015, the government announced that it was suspending the subsidy reform.

Second, announcing new prices regularly in an easily accessible format, even if there are no changes, is important.

- If the original decision is to announce new prices on a certain day or days every month, the announcement should be made on the specified days. At a minimum, the announcements should be on the website of the agency in charge or some other government portal, the

important point being that all announcements should be available on the same website and preferably consolidated in one place. Transparency is further enhanced if historical prices are made available in a table so that they can be looked up easily.

- It is tempting to skip announcements or fail to post them when prices are not changed. But the absence of a posted announcement should not substitute the decision not to change prices. In Indonesia, fuel price decisions, which are supposed to be announced at least once a month, were not posted on the government portal for July and August 2015. While this signaled the decision not to change prices, silence introduces uncertainty. In Malawi, not all announcements are available on the website of the Malawi Energy Regulatory Authority (MERA). Consumers should not have to rely on news reports. And MERA in mid-2014 stopped reporting on the heavily subsidized price of kerosene for domestic use—which had remained constant since the automatic pricing mechanism was adopted in June 2012.

Third, the more frequently prices are adjusted, the more likely the government will increase domestic end-user prices when global prices in local currency begin to rise. Price volatility is a concern of all governments that control prices. A common reaction is to try to smooth volatility by changing prices as infrequently as possible, even at the cost of a “temporary” revenue shortfall. The practice of changing prices regularly and frequently, however, introduces discipline and makes it less likely for the government to stop or slow down price adjustment when prices need to be increased. The failure to increase prices after successive price cuts was the most common way subsidies were re-introduced as the world oil price began rising in 2009.

- If the world oil price changes only slightly, there is a temptation not to adjust domestic prices for the sake of price stability. In fact, some governments have the policy of freezing domestic prices as long as changes in the world oil price in local currency remain within a band, such as 5 percent of the landed cost in Malawi. While price stability has some attractions, what the global experience suggests is that acquiring the habit of changing prices takes time, and the longer the time lapse between successive price changes, the greater is the resistance to increasing prices, not only by the public but also by the government. Perhaps worryingly, the frequency of price adjustments in Malawi under the automatic pricing mechanism, which started in June 2012, has been steadily declining, and not because the frequency of exceeding the 5-percent band limit has declined: 3 times in the last 7 months of 2012, 8 times in 2013, 3 times in 2014 despite price volatility being greater in 2014 than in 2013, and 6 times in 2015.
- By contrast, the Government of Morocco adjusted ex-refinery prices twice a month every month between January and November 2015 as it had announced, even when the change is less than 0.2 percent. If the needed changes are small, the impact on end-users should be correspondingly small, making the “cost” of enhancing the discipline for regular price adjustment small or negligible. Similarly, the Government of Jordan has been adjusting fuel prices every month since December 2012.
- As mentioned in the previous section, one significant disadvantage of infrequent price changes is that when prices are finally adjusted, the adjustments tend to be large, thereby increasing public resistance to price adjustments and pricing reform. In Malawi, price adjustments are by definition greater than 5 percent, because price adjustments are triggered only when the landed price in local currency has changed by more than 5 percent from the previous month.

Fourth, publishing a transparent formula for setting prices, adhering to the formula, and providing enough data for an independent analyst to reproduce the results removes the discretionary powers of the agency in charge and helps to depoliticize pricing. Using a formula can also reveal the price gap, making unit subsidies clear to the public.

- Every week on its website, the Government of Chile posts all the data needed to calculate the variable fuel tax components, which are used to smooth transportation fuel prices for small and medium consumers. The procedure is clearly explained and enables replication of the tax calculations independently by anyone with spread-sheeting capability.
- The Petroleum Products Pricing Regulatory Agency of Nigeria posts a detailed breakdown of prices for several refined products including the two subsidized fuels (gasoline and kerosene) on its website frequently.
- The Vietnam Petroleum Association, which was formed in March 2013, posts on its website a detailed breakdown of prices and price gaps for gasoline, diesel, kerosene, and fuel oil when prices are changed (usually twice a month).

Fifth, subjecting pricing policy to “socioeconomic considerations” can lead to these considerations becoming an escape clause to justify not increasing domestic prices in line with the world oil price movement. Socioeconomic considerations are better addressed outside of universal price subsidies.

- Indonesia’s regulations are subject to socioeconomic considerations, which are partially responsible for the failure of the government to adjust prices in line with world petroleum product prices in 2015.
- The Public Utilities Commission of Ghana did not increase power tariffs as required in July 2014, April 2015, and July 2015. For example, the required increase in July 2015 was 51.7 percent, but tariffs were not changed to protect consumers.
- MERA in Malawi “cushioned” consumers from higher prices on several occasions in 2015, despite the landed costs in local currency rising by more than 5 percent, the threshold level for price increases.
- The pitfalls of price controls detailed earlier point to pricing being a sub-optimal instrument for controlling inflation and assisting the poor. The peer review of Peru’s subsidy policy by the Asia-Pacific Economic Cooperation recommended that concerns about inflation and social protection be addressed by other means—the interest rates set by the Central Bank to curb inflation, and protecting the vulnerable through social protection measures including targeted cash transfers to the poor (APEC 2015).

Sixth, there is weak evidence that price stabilization funds can smooth domestic prices without serious fiscal consequences. These funds tend to be depleted when they are most needed—in times of soaring or persistently high world fuel prices—and cannot be used to lower domestic prices, unless they are overdrawn and build large deficits.

- In Vietnam, the stabilization fund in recent years has arguably served to amplify rather than reduce oil price volatility. In February 2015, when retail prices were already benefitting from very low world prices, the stabilization fund was used to provide a subsidy of US\$0.12 per liter of gasoline, US\$0.06 per liter of diesel, and US\$0.08 per liter of kerosene. This illustrates how powerful is the political pressure to withdraw when the fund balance is rapidly growing.

- It is telling that, after two decades of working with two price stabilization funds, Chile has essentially abandoned them and switched to adjustable fuel taxation as a means of smoothing domestic prices. It is worth noting that the approach slows down *downward* price movements as much as upward ones.

Lastly, a period of low world fuel prices is a good time to introduce or increase fuel taxes. Ghana managed to impose a new 17.5-percent fuel tax at a time when oil prices were rapidly falling, resulting in price increases of only 3 percent and avoiding undue attention from the public. There are many advantages to increasing the share of tax in the fuel price:

- A relatively high specific (as opposed to ad valorem) tax dampens oil price volatility automatically, as in the United Kingdom and several other high-income OECD countries.
- For major oil producers, the loss of revenue from low oil prices can be much greater than any savings from subsidy reduction. Taxing consumption is one way of partially offsetting the loss of oil revenue.
- More generally, taxing fuel can generate an important source of revenue in developing countries where income tax collection may not yet be effective.
- One reason fuel efficiency is higher in Europe than in the United States is the higher level of fuel taxation in Europe. Taxes can help reflect unaccounted externalities while discouraging inefficient or nonessential energy use.

For major oil producers reliant on oil revenue, it is almost certain that the loss of government revenue from the collapse of the world oil price far exceeds the fiscal gains from reduced subsidies and new or higher fuel taxes. This presents a special challenge to the standard recommendation to increase social protection measures in response to subsidy reform, because the total budget available, net of subsidy reduction, may be much lower than when price subsidies were large but the world price of oil was also high. This points to the importance of having a robust policy for an integrated, unified budget.

To avoid the technical challenge of estimating costs correctly for the purpose of setting prices and to depoliticize fuel prices, an alternative is price deregulation—provided steps are taken to foster competition in the market—combined with subsidies delivered through cash transfers to vulnerable end-users. India has taken this approach to residential LPG subsidies, and subsidized LPG with a much lower unit cost is no longer sold. Instead, the government transfers cash to anyone who has signed up for the Direct Benefits Transfer for LPG, using a 17-digit customer identification number. Peru has set up a similar LPG scheme for the rural poor, but with very tight eligibility criteria. These are variations on a scheme launched earlier in the Dominican Republic for LPG, called Bonogas. For fuels used as intermediate goods, including compensation for the indirect effects of higher fuel prices in the transferred amounts helps avoid the need to compensate producers separately. That said, subjecting consumers fully to price volatility complicates delivery of social protection: the financial assistance needed changes more frequently and rapidly, posing a challenge to the calculation and delivery of the assistance.

Concluding Remarks

The halving of the world oil price in a matter of four months between September 2014 and January 2015 prompted several governments to announce that they were ending universal price subsidies for certain petroleum products. At the time of the announcements, petroleum product prices had fallen so low that some governments were able to reduce prices and still eliminate price subsidies. In the next four months, the world oil price rose by about a third, testing the resolve of these governments. Perhaps not unexpectedly, the announcement to end price subsidies for once and all was not necessarily followed by action as the world oil price rose.

This and other papers have illustrated how price subsidies can entrench the monopoly status of a state-owned energy supplier, enable it to play a pseudo-regulatory role in the process, discourage investment in the sector, and make it difficult to improve sector governance and efficiency. Pricing reform is an essential component of a sector strategy to address other ills in the energy sector. This makes it all the more urgent to move to market-based pricing and full cost recovery to facilitate the entry of other energy suppliers and handle socioeconomic concerns by other means, ideally in the form of cash transfers to the vulnerable.

This paper has also provided examples of low electricity tariffs requiring low gas prices, which discourage gas production and create gas shortages, thereby worsening the already weak financial state of the power sector. This vicious cycle inextricably links the power and gas sectors, whereby price subsidies and poor performance in one cause serious harm to the other. Breaking out of this logjam requires parallel reforms in both sectors. Such parallel efforts are underway in Nigeria.

Indications from recent experience are that regular and frequent price adjustments, no matter how small, and not allowing exceptions to be made, can increase the chances of sustaining pricing reforms. As stressed in many other publications on this topic, being able to do so requires a robust social protection scheme in place. The level of sophistication required for social protection increases with decreasing government interference in fuel pricing, because consumers and the economy are increasingly exposed to world price volatility, and full exposed if prices are deregulated. But given the fiscal and macroeconomic hardships caused by fuel subsidies in the last decade around the developing world, strengthening social protection should bring rich dividends.

Public disclosure of information linked to prices and subsidies—international prices in local currency units, the price gaps (if any) for different fuels today and their historical evolution, budgetary transfers to pay for the price gaps, use of taxpayers' money to bail out or capitalize energy companies, transfers to and from price stabilization funds—can help bring various stakeholders to be “on the same page” and promote an informed understanding of the need for and the rationale behind subsidy reform programs. In so doing, it would be useful not to focus only on price gaps and budgetary transfers, but also highlight lost opportunity costs. The step taken by the Government of Algeria to publish the cost of implicit subsidies in the 2014 budget law is one such example.

Barring significant supply disruptions, the world oil price is not expected to start soaring for the foreseeable future. As a result, natural gas and coal prices will also likely remain at the current levels. In countries where fuel prices are controlled and kept low by the government, this is a good time to start

adjusting prices frequently with a limited risk of significant inflation induced by fuel price changes. Many governments failed to take advantage of the opportunity afforded in 2008 and 2009 to move to formula-based pricing while strengthening social protection measures. Governments should not miss the opportunity this time.

Annex: Supporting Country Information

Algeria

Algeria last issued prices for liquid fuels in Executive Decree 07/60 of February 11, 2007. The decree set prices retroactively effective January 1, 2007, and the government has frozen prices since. The end-user prices are among the lowest in the world. The price of LPG sold in 35-kg cylinders, for example, has been fixed at DA 400, equivalent to about US\$120 a tonne. To put this in context, Sonatrach, Algeria's national oil company, sold LPG between January 2007 and September 2015 on the international market at an average FOB price of US\$700 a tonne. For market-based end-user prices, to US\$700 must be added the costs of bottling, storage, transport, retailing, and any applicable taxes. The two crude oil prices for refineries (the price varies by refinery) have been decoupled from the world oil price and fixed in local currency units since 2007. Although the dollar equivalent depends on the prevailing exchange rate, the prices have been less than US\$25 a barrel.

According to Executive Decree 10/21 of January 2010, domestic natural gas prices are meant to be adjusted annually, but they have not been. The transfer price of natural gas for power generation appears to have been fixed since 2005 at a mere US\$0.23/mcf (http://www.mem-algeria.org/fr/statistiques/c_tarification_prp.htm).

The International Monetary Fund (IMF) reported in 2014 that the total implicit subsidies (not involving budgetary transfers) for hydrocarbons in 2012 amounted to 10.9 percent of GDP. The government published the cost of implicit subsidies in an appendix to the 2014 budget law for the first time, and had planned to do so again for the 2015 budget (IMF 2014k).

The regulatory agency had some years earlier recommended raising petroleum product prices by DA 2 (US\$0.02) per liter every year for a decade, but the proposal was not accepted. In June 2015, the Minister of Energy reported that the government was conducting a study on the rationalization of fuel consumption to address inefficient fuel use and fuel smuggling (*Liberté* 2015).

On December 30, 2015, the president signed the finance law of 2016. It raises the VAT on diesel, electricity (for consumption exceeding 250 kWh per quarter), and natural gas (for consumption exceeding 250 mmBtu per quarter) from 7 percent to 17 percent (Algeria 2015). Arguing that no country can sustain generalized subsidies of DA 1.8 trillion (US\$17 billion), the finance minister earlier in the same month announced that Algeria would follow Morocco in gradually reforming subsidies until prices reach their "true" values (*Magazine du Manager* 2015).

Angola

Angola froze liquid fuel prices for four years from September 2010 until September 2014, when the prices of gasoline, kerosene, diesel, and LPG were all raised. The prices of gasoline and diesel were raised again three months later in December 2014. An executive decree issued in December 2014 gave estimations of remaining subsidies after the price increase (Angola 2014). They were large, but based on implausibly high unsubsidized prices for some products: US\$2.22 per kg of LPG, US\$1.47 per liter of gasoline, US\$1.38 per liter of kerosene, and US\$0.98 per liter of diesel, all before any taxes were levied.

An executive decree issued on April 30, 2015 deregulated the price of gasoline, set the price of crude oil supplied to the refinery at US\$60 (with no units given, but presumably per barrel) at an exchange rate of Kz 115 to the dollar, and raised the prices of other fuels. The most recent executive decree issued on December 30, 2015 deregulated the price of diesel, raised kerosene and LPG prices, and set the price of crude oil supplied to the refinery at US\$39.98 per barrel at an exchange rate of Kz 116 to the dollar.

Because price adjustments are infrequent, adjustments at any given time tend to be large (Table 3). Although gasoline and diesel prices are now “deregulated,” they do not change frequently, and the prices rose by 39 percent and 80 percent, respectively, in January 2016 (SAPO 2015). Furthermore, the price difference between kerosene and diesel, two substitutable fuels, has widened since August 2010, which provides financial incentives for adulterating diesel with kerosene, a problem faced in many other countries such as India. Because of currency depreciation, despite the price increases announced on April 30, 2015 by the finance ministry, the price of kerosene is now lower in U.S. dollars than it was at the end of 2014, with an estimated price gap of US\$0.33 per liter. The finance ministry calculated the price gap for LPG to be US\$1.02 per kg and that for diesel was US\$0.18 per liter. The large price gap for LPG is in part due to the very high ex-refinery price of LPG, US\$1.00 per kg, against FOB prices in different parts of the world of about US\$0.37–0.47 per kg at the time.

Table 3: Fuel price adjustments in Angola, price per liter

Fuel	Unit	Aug 2010	Sep 2010	Sep 2014	Dec 2014	April 2015	January 2016
Gasoline	Kz/liter	40	60	75	90	Deregulated	Deregulated
Kerosene	Kz/liter	26	26	35	35	45	70
Diesel	Kz/liter	29	40	50	60	75	Deregulated
LPG	Kz/kg	37	37	45	45	55	100
Gasoline	US\$/liter	0.43	0.66	0.77	0.88	Deregulated	Deregulated
Kerosene	US\$/liter	0.28	0.29	0.36	0.34	0.41	0.52
Diesel	US\$/liter	0.31	0.44	0.51	0.59	0.69	Deregulated
LPG	US\$/kg	0.40	0.41	0.46	9,44	0.51	0.74

Sources: Various government announcements.

The fuel subsidies in 2014 were estimated to amount to 3.7 percent of GDP. Grid electricity is generated largely from hydropower, with the balance from diesel and a very small amount from two gas turbines. The power sector is given free diesel, amounting to 1.3 percent of GDP. Aside from free diesel, the power sector is provided with additional subsidies (IMF 2015a; AfDB 2014; BMI 2015b).

The state budget for 2016 sets aside Kz 447 billion (US\$3.3 billion), or 3.1 percent of GDP, for subsidies. It envisages liberalizing the price of diesel fuel, as the government did with gasoline in April 2014. The budget emphasizes the importance of the “optimization of energy prices,” and commits the government to continuing the steps to eliminate energy subsidies over time (Angola 2015).

Argentina

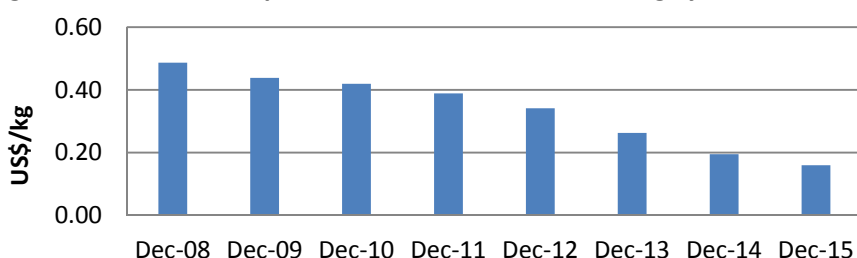
Although the petroleum sector was deregulated in 1989, successive administrations since 2001 have introduced measures to keep domestic fuel prices low to curb inflation. The measures have included price accords with oil companies, use of the 1974 Law of Supply to threaten companies with fines and

even the imprisonment of company executives to prevent them from raising prices, and high export taxes, which are intended to lower export-parity—and consequently domestic—prices. One recent example is freezing of gasoline and diesel prices in April 2013 for six months, further extended by 45 days in October 2013, ahead of the legislative elections on October 27 (Indo-Asian News Service 2013).

These policies have had detrimental effects on the oil and gas sector by discouraging investment. Oil and gas production has fallen steadily, turning Argentina from a net exporter to a net importer. Between 2005 and 2010, some 3,500 retail outlets closed (Kojima 2013a). Faced with a precipitous fall in pesos and increasing fuel imports, the government raised the prices of refined products repeatedly in 2014. In 2015, against the backdrop of collapsed world oil prices and prospects of further cuts in investments, the government introduced a series of incentive measures. The government is to pay US\$3 a barrel to companies that maintain or increase production for the domestic market compared with the fourth quarter of 2014. The incentive for exported oil is US\$2 a barrel if exports are sustained at 2014 averages and US\$3 if they are increased. While previously crude oil prices for the domestic market were kept markedly below international prices, they are now much higher for the domestic market, ranging from US\$63 to as high as US\$77 per barrel. Earlier, the government had cut export taxes, with a sliding scheme taking the tax rate to as low as 10 percent at US\$70 per barrel of West Texas Intermediate crude, and now falling to 1 percent (*Platts Commodity News* 2015b). Partly as a result of the high crude oil price, refined product prices on the domestic market have risen rather than fallen in 2015 (*Platts Commodity News* 2015d). Following the presidential election in November 2015, Argentina's new energy minister Juan Jose Aranguren announced that the government would maintain wellhead crude prices above international levels for the time being, but would lower them over time. As for wellhead prices of natural gas, which have been kept low, the government plans to increase them gradually (Merco Press 2015).

An example of a price agreement with fuel suppliers is one for stabilizing the prices of LPG sold in 10-, 12-, and 15-kg cylinders. In September 2008, the energy ministry and LPG producers entered into an agreement, setting the prices of LPG sold in small cylinders for residential use low. The agreement was accompanied by establishment of a fund to reimburse LPG suppliers for revenue shortfalls. The agreement requires LPG producers to supply LPG bottlers with the same volume of LPG supplied the prior year and to accept the price set by the government. This agreement has been extended repeatedly. In 2015, the eligibility for access to subsidized LPG was restricted to low-income households without connection to natural gas. The price of subsidized LPG, which has not changed, has fallen steadily because of currency depreciation to less than half of the value in 2008 (Figure 8). Not surprisingly, shortages of LPG at these exceptionally low prices are reported to have pushed up the actual prices paid by consumers several-fold (*Graceta* 2014). The proposed 2016 budget includes 2.3 billion pesos (US\$0.2 billion) for LPG subsidies to be financed by transfers from Fondo Fiduciario para Subsidios de Consumos Residenciales de Gas Licuado de Petróleo (Trust Fund for Residential LPG Consumption Subsidy) (Noticias del 6 2015).

Budgetary transfers for energy subsidies rose from US\$16.6 billion (2.7 percent of GDP) in 2013 to nearly US\$20 billion in 2014 (Table 4). Subsidies include those for a state-owned coal company, amounting to about US\$0.5 billion annually. End-user gas prices have been kept low for many years. The so-called Gas Plan, approved in early 2013, guarantees a price of US\$7.5 per mmBtu to producers and subsidizes the

Figure 8: Official retail price of LPG sold in 12- and 15-kg cylinders converted to U.S. dollars

Source: World Bank staff calculations based on data at <http://www.infoleg.gov.ar/infolegInternet/anexos/240000-244999/240545/norma.htm>.

difference between this price and domestic gas prices. Decree 786/2002 established a fund to subsidize residential LPG for low-income households and natural gas expansion. The fund is paid for by specific charges on natural gas consumption. The decree limits the total amount of subsidies and compensation provided by the fund to 100 million pesos a year, although the Minister of Economy is granted the authority to increase the amount. It is clear from Table 4 that the annual budgetary transfers in 2013 and 2014 were far in excess of this limit.

Table 4: Budgetary transfers for various energy subsidies

Recipient	2014		2013	
	million pesos		US\$ million	
Compañía Administradora del Mercado Mayorista Eléctrico ^a	71,333	36,229	8,799	6,623
Energía Argentina Sociedad Anónima ^b	53,450	31,188	6,593	5,702
Plan Gas	11,299	6,236	1,394	1,140
Yacimientos Carboníferos Río Turbio ^c	3,711	2,913	458	533
Fund for power transmission	1,274	1,025	157	187
Fund for residential natural gas subsidy	322	153	40	28
Fund for subsidizing low-income consumers of LPG and natural gas expansion	1,841	1,525	227	279
Provincial agencies	3,063	1,890	378	346
Nucleoeléctrica Argentina S.A.	6,608	4,882	815	892
Others	7,853	4,677	969	855
Total	160,755	90,717	19,828	16,584

Source: ASAP 2014.

a. Wholesale administrator of electricity.

b. State-owned enterprise created in 2004 to engage in oil and gas exploitation and commercialization as well as the power sector.

c. State-owned coal mining company.

A 2011 resolution removed subsidies for imported gas established under Decree 2067 of November 2008 for certain categories of non-residential consumers. Resolution I/2851 issued in April 2014 allowed for three consecutive natural gas tariff hikes in April, June, and August, reducing price subsidies. In order to promote conservation, incentives were provided by making tariff increases dependent on the degree of consumption reduction—there are three tariff tables, corresponding to consumption reduction of more than 20 percent, between 5 and 20 percent, and less than 5 percent than that in the same period a year earlier. The differences in tariffs are substantial, amounting to hundreds of percent. Resolution

I/2905 issued in May 2014 exempted certain residential consumers from subsidy reduction. Criteria for exemption include low income, disability, being recipients of certain welfare benefits, and running business from home. Tariffs for all consumer categories were raised again in May 2015 (Table 5).

Table 5: Revised natural gas tariffs effective May 2015 before tax with incentives for consumption reduction

Category	Reduction > 20%		Reduction < 5%	
	Pesos/m ³	US\$/mcf	Pesos/m ³	US\$/mcf
Residential R1	0.14	0.45	0.48	1.52
Residential R3 4	0.25	0.78	1.96	6.20
General Service P3	0.22	0.69	0.45	1.42

Source: <http://www.enargas.gov.ar/Tarifas/Index.php>.

Note: The tariffs are for the Capital Federal region. Consumers in R1 are charged the least and those in R3 4 are charged the highest tariffs. The tariff for P3 is for the first 1,000 m³, with declining tariffs thereafter.

Bangladesh

After four successive price increases in 2011, the government last raised liquid fuel prices in January 2013 (www.bpc.gov.bd/). The only exception is jet kerosene, the price of which has been adjusted more frequently. Energy-related subsidies declined as a percentage of GDP from 1.7 percent in FY 2013 to 1.0 percent in FY 2014 (July 1, 2013 to June 30, 2014) and 0.8 percent in FY 2015 (IMF 2014d).

Natural gas tariffs in Bangladesh have been regulated at very low levels. The tariffs were not adjusted between 2009 and September 2015—except the tariff for compressed natural gas (CNG) for automotive use, which was raised twice in 2011. The 2015 tariff increase did not affect fertilizer and power plants, which account for nearly half of the total gas consumption, and they continue to pay a mere US\$1 per mcf (Table 6). These low prices have led to abandonment of some very large gas development projects (*Financial Express* 2015a), exacerbating gas shortages.

Table 6: Natural gas tariffs in Bangladesh

Consumer category	Units	Taka	US\$
Residential, double-burner stoves	per month	650.00	8.35
Residential, single-burner stoves	per month	600.00	7.71
Residential, metered	per mcf	198.22	2.55
Captive power plants	per mcf	236.73	3.04
Power plants	per mcf	79.85	1.03
Fertilizer	per mcf	71.36	0.92
Industrial users	per mcf	190.85	2.45
Tea estates	per mcf	190.85	2.45
Commercial users	per mcf	321.68	4.13
Compressed natural gas	per mcf	991.08	12.73

Source: *Financial Express* 2015b.

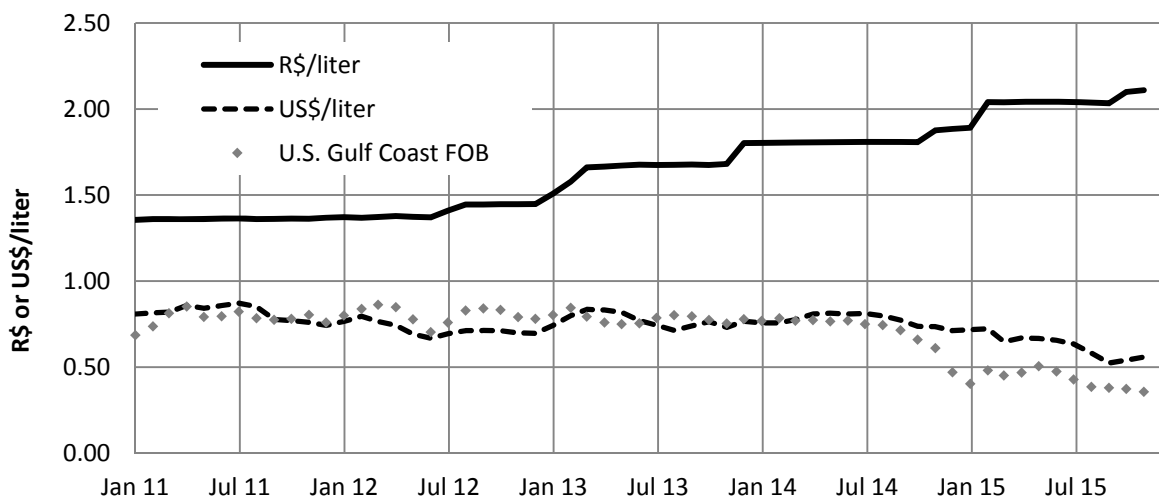
Note: Taka per cubic meter converted to taka per mcf.

Brazil

The official position of the Government of Brazil is that the downstream petroleum sector was completely deregulated effective January 2002. The government has nevertheless continued its informal policy of keeping domestic prices of petroleum products artificially low through losses suffered by Petrobras, a semi-public oil company that controls more than 99 percent of the refining capacity in the country.

A history of producer prices of diesel is shown in Figure 9. Also shown are the spot prices of diesel on the U.S. Gulf Coast—which has the lowest prices of three benchmark markets in the United States, the other two being the West Coast and New York Harbor—during the same period. Brazil is a net importer of diesel. Therefore, import-parity prices should form the basis for economic pricing, which means that shipping costs should be added to the U.S. Gulf Coast prices. In 2014, according to the annual statistics provided by the regulatory agency, 44 percent of diesel imports was from the United States and another 40 percent was from India. It is clear that, for many months since 2011 and until the recent precipitous drop in world oil prices, producer prices were lower than even FOB prices on the U.S. Gulf Coast and consistently lower than import-parity prices. Producer prices of gasoline and diesel did not change between February and September 2015.

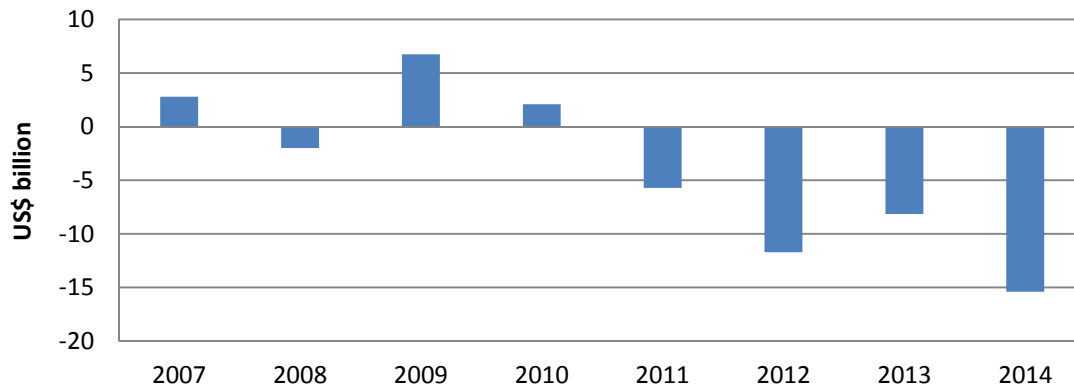
Figure 9: Comparison of producer prices of diesel fuel in Brazil with U.S. Gulf Coast FOB diesel prices



Sources: <http://www.anp.gov.br/?id=2368> for Brazilian prices, <http://www.eia.gov/petroleum> for U.S. Gulf Coast.

Note: Brazilian diesel prices are for diesel to December 2012 and diesel with 10 parts per million sulfur since January 2013 for direct comparison with U.S. Gulf Coast prices.

This policy has contributed substantially to the large losses suffered by the downstream arm of Petrobras since 2011 (Figure 10). The losses grew in periods of increasing imports, because Petrobras had to import refined products at world prices and sell below cost. In addition to being a net importer of diesel, Brazil in 2011 became a net importer of gasoline (ANP 2015a). The net loss in 2014 is fundamentally different from other years in that Petrobras wrote off US\$12.8 billion for overvalued assets and another US\$1.4 billion for “incorrectly capitalized” overpayments, or a total of US\$14.2 billion out of the net income loss of US\$15.4 billion shown in Figure 10.

Figure 10: Net income of the refining, transportation, and marketing segment of Petrobras

Source: <http://www.investidorpetrobras.com.br/en/financial-results/>.

The producer price of LPG sold in 13-kg cylinders, used by households, was frozen between December 2002 and September 2015 and remained R\$0.87 (varying between US\$0.25 and US\$0.55 depending on the exchange rate) per kg before tax. In September 2015, the producer price was raised to R\$1.00 (US\$0.26) per kg (ANP 2015b). Brazil is a net importer of LPG, but the producer price has been significantly below the import-parity price of LPG. The producer price of LPG sold to other consumers has been adjusted but infrequently: Since 2003, there have been seven adjustments, of which the one in February 2009 was a downward adjustment and all others (January, April, and June 2008, January 2010, December 2014, and September 2015) were upward. In 2015, the producer price of other LPG was two-thirds higher than that of LPG sold in 13-kg cylinders until September. While the producer price and taxes for the latter was frozen between December 2002 and September 2015, distribution and retail margins more than doubled in local currency, increasing the end-user price over the years.

There are subsidies for natural gas used in power generation in Brazil. For example, in April 2015, the price of domestic gas charged to distributors was US\$8.80 per mmBtu but there was a discount of US\$2.37 per mmBtu offered to the power sector. Even a bigger discount is offered to legacy plants benefiting from the Thermoelectric Priority Program. In the same month, the price natural gas under the program, before tax, was only US\$4.03 per mmBtu, against US\$11–14 per mmBtu after tax paid by large industrial consumers of natural gas, depending on location. The price before tax in fact averaged US\$4.03 during the first nine months of 2015, falling from US\$4.20 in January to US\$3.78 by September (MME 2015a, 2015b).

Cameroon

The Caisse de Stabilisation des Prix des Hydrocarbures (CSPH, Hydrocarbon Price Stabilization Board) is a regulatory agency and a public company in Cameroon with a legal status and financial autonomy established in 1974. The CSPH sets and equalizes the prices of petroleum products at all depots throughout the country for the purpose of protecting consumers from price fluctuations, in principle within the limits of its funds. The CSPH is supposed to review prices every month and make recommendations to the government. It is financed in part by equalization fees it levies on petroleum products for pan-territorial pricing.

In December 2007, the government adopted a formula for setting ex-refinery prices and a simplified price structure, which eliminated cross-subsidies and tax distortions. The new price structure went into effect in January 2008 (IMF 2008). However, at least 40 were killed in the following month when demonstrators clashed with troops in a series of violent demonstrations, started by the urban transport union protesting against higher fuel prices and poor working conditions (Dow Jones Energy Service 2008). In response, the government lowered fuel prices in 2008, and froze them between January 2009 and June 2014, when prices were raised by 14 percent for gasoline, 15 percent for diesel, and 8 percent for LPG sold in 12.5-kg cylinders, while the price of kerosene was unchanged at CFAF 350 (US\$0.73) per liter. The government has not adjusted prices since. According to the price structure on the CSPH's website, in 2015, kerosene was subsidized every month, gasoline from June to August, and diesel in January and from June to August.

Fuel subsidies amounted to 2.8 percent of GDP in 2013, crowding out public spending in such essential areas as health and education, which was lower than in Cameroon's peers in Sub-Saharan Africa. The government could not pay fuel prices in full, increasing its debt obligations. While acknowledging the urgent need for subsidy reform, the government had not drawn up a time table for subsidy phase-out as of mid-2014 (IMF 2014g). Fuel subsidies continued to weigh on the government's budget during the first half of 2014, with a projected total equal to about 3 percent of GDP and double the budgeted amount. The subsequent fall in world oil prices combined with the price increase of June 2014 is estimated to have reduce these subsidies by CFAF 120 billion (US\$0.4 billion) in 2014 (World Bank 2015a).

Chile

The Government of Chile has implemented various stabilization mechanisms since 1991 following the Gulf War, when the government established FEPP (Fondo de Estabilización de Precios del Petróleo, Stabilization Fund for Petroleum Prices). In September 2005, government established a new, temporary price stabilization fund, FEPCO (Fondo de Estabilización de Precios de Combustibles Derivados de Petróleo, Petroleum Product Price Stabilization Fund), intending to retire it by June 2006. After FEPCO became effective, FEPP was restricted to LPG and residual fuel oil. Subsequent world price movements prompted the government to keep the fund operating until 2010. In 2008, the government made two large transfers to FEPCO from its copper fund, amounting to a total of US\$0.7 billion.

A law published in February 2011 replaced FEPCO with SIPCO (Sistema de Protección al Contribuyente ante las Variaciones en los Precios Internacionales de los Combustibles, System of Protection against Variations in International Fuel Prices), which relied on fuel tax adjustments to dampen the transmission of oil price volatility from the global to the domestic market. SIPCO was for small and medium enterprises and consumers, and covered four automotive fuels: gasoline, diesel fuel, automotive LPG, and CNG. Each fuel had a specific fuel tax, which consisted of a fixed component and a variable component. The variable component was determined by the price difference between the import-parity price and the upper or lower band of the reference price. Adjustments to the variable tax component were made if world petroleum product prices fell outside the band, the width of which was changed from 12.5 percent to 10 percent in September 2012. The reference price was established by the Ministry of Energy, which considered both current and future prices of West Texas Intermediate (future crude oil prices were given a weight ranging from 0 to 50 percent) and adjusted the price band every week. SIPCO did not cover large diesel consumers such as power plants and mining companies.

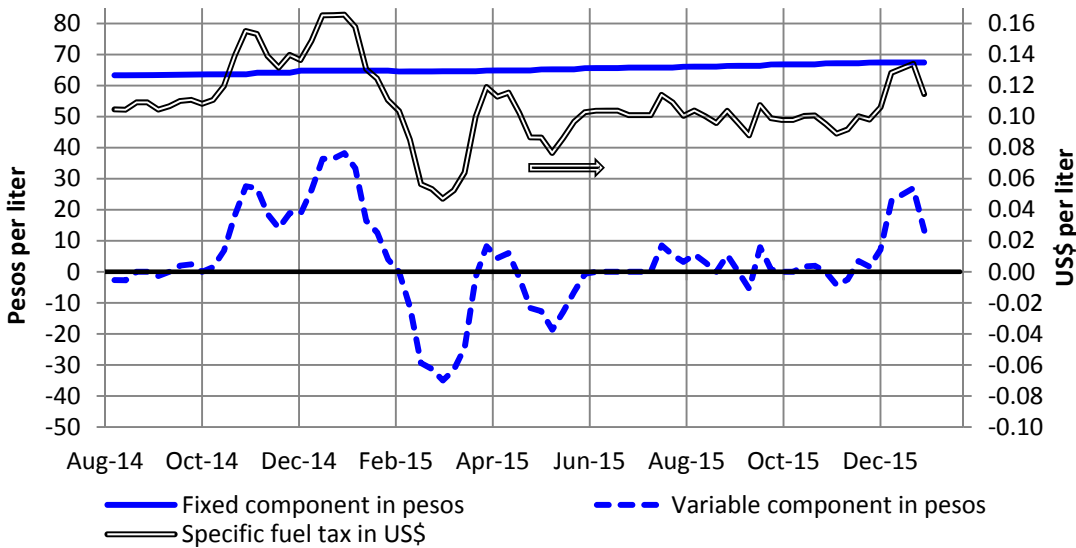
In July 2014, a law replaced SIPCO with MEPCO (Mecanismo De Estabilización De Precios De Los Combustibles, Fuel Price Stabilization Mechanism). MEPCO works on the same principle of adjusting the variable component while not touching the fixed component, but with some modifications. The band around the reference price is reduced to 5 percent. The variable component of the specific fuel tax is initially set to limit changes in retail prices to about 5.2 Chilean pesos (US\$0.008) per liter a week, a limit that is adjusted for inflation (see discussion on the monthly tax unit below). If the import-parity price differs from the reference price by more than 5 percent, however, this requirement is over-ridden and the variable component is adjusted to keep the ex-refinery price within 5 percent of the reference price. The cumulative deficit from the variable component of the fuel tax is limited to the peso equivalent of US\$500 million. If this threshold is reached, the variable component is made to reach zero over a maximum of 12 weeks using a formula. If, despite the application of the formula, another deficit of US\$100 million accumulates at any time during the 12-week period, the variable component is immediately set equal to zero. The calculation rules were debated extensively prior to finalizing them. The history of different options considered and how the adopted methodology was selected has been written up and available on the website of the Chilean National Congress of Library (BCNC 2014).

An important aspect in setting specific fuel taxes in Chile is the UTM (Unidad Tributaria Mensual, monthly tax unit), a currency unit expressed in Chilean pesos and adjusted monthly in line with the consumer price index. The fixed component of the specific tax is expressed in UTM, so that it automatically adjusts with inflation. This avoids the type of problem encountered in the United States where, due to a political gridlock, the federal excise tax has been frozen at US\$0.183 per gallon (US\$0.048 per liter) for gasoline and US\$0.244 per gallon (US\$0.064 per liter) for diesel since 1993. Because the excise taxes are not indexed to inflation, their real values have been steadily declining over the last two decades, depriving the Federal Highway Trust Fund of the necessary funds to maintain federal highways.

The fixed components for gasoline, diesel, automotive LPG, and automotive CNG are 0.006 UTM (US\$0.41) per liter, 0.0015 UTM (US\$0.10) per liter, 0.0014 UTM (US\$0.10) per liter, and 1.93 UTM (US\$0.13) per cubic meter, respectively. The history of the specific tax for diesel since MEPCO came into effect is illustrated in Figure 11.

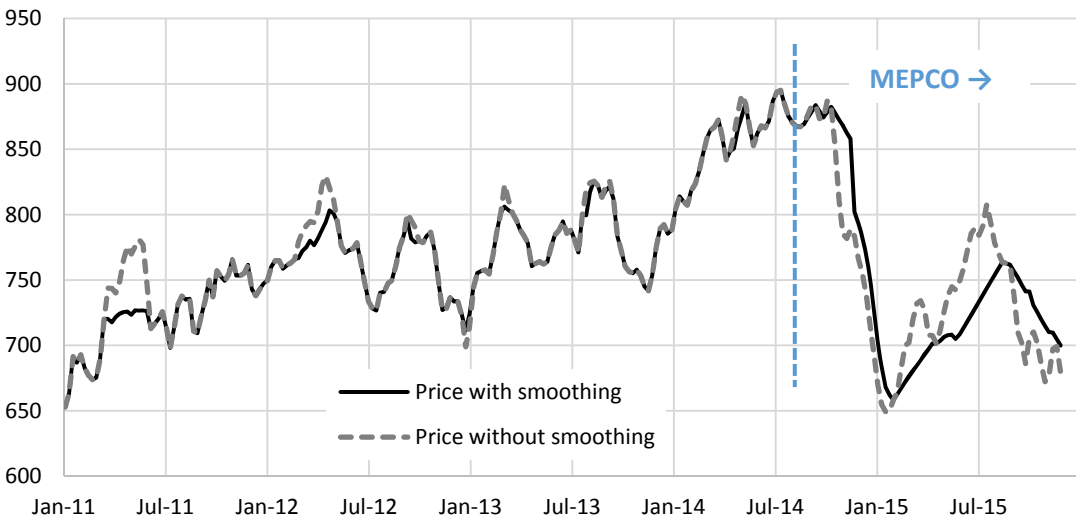
The extent of smoothing achieved by the specific tax is shown for gasoline in Figure 12. The new formula that came into effect in August 2015 smooths prices more effectively than the previous regime. A review of MEPCO conducted by the Latin American Center for Economic and Social Policy (Clapes-UC 2015) found that between MEPCO's inception on August 7, 2014 and December 10, 2015, the variable tax component for gasoline (93 and 97 RON) translated to a net subsidy of US\$2 million, while that for diesel produced a net income of US\$25 million, or a total net variable tax for the two fuels of US\$23 million. The highest and lowest variable tax components were 82.60 pesos (US\$0.14) per liter in October 2014 and -73.08 pesos (-US\$0.11) in July 2015, respectively, for gasoline, and 38.26 pesos (US\$0.06) in January 2015 and -34.99 pesos (-US\$0.06) in March 2015, respectively, for diesel.

Figure 11: Fixed and variable components of specific tax for diesel in Chile under MEPCO



Source: World Bank staff calculations based on data at http://www.sii.cl/pagina/valores/impto_valores_petro/impuesto_enero2016.htm.

Figure 12: Comparison of retail gasoline price with and without smoothing in Chile, Chilean pesos per liter



Source: Comisión Nacional de Energía.

To encourage price competition, Resolution No. 60 issued in January 2012 requires that each retail outlet enter price information in a national online price database, which is published on the website of the National Energy Commission (Comisión Nacional de Energía, CNE). The information is available on mobile equipment, and the CNE also provides API (application programming interface) to download price information. The website displays the address of each retail outlet, fuel prices, and the date and time of the last price change. The viewer has the option of ranking prices in order of increasing or decreasing prices. Retailers are required to enter new prices no earlier than 15 minutes before price changes are implemented.

China

A brief history of petroleum product pricing policy in China is provided below.

- Before 1998 The central government set ex-refinery prices and retail prices in major cities, and local governments set wholesale prices and retail prices in smaller cities based on the central government prices.
- 1998 The government switched to a system of guidance prices, in principle granting freedom to set prices within a 5-percent band around the guidance price. The guidance prices were meant to follow spot prices in Singapore, changing when the prices there changed by more than 5 percent. In practice this pricing mechanism was often not implemented. In 2001, the government moved from using spot prices only in Singapore to a basket of prices in Singapore, Rotterdam, and New York; abolished all controls on fuel oil; and also widened the band for diesel from 5 percent to 8 percent.
- 2006 The government changed the basis for the timing of price changes from refined product prices to crude oil prices, given the share of domestically refined products.
- January 2009 The government set a price ceiling for gasoline, diesel, and jet fuel based on a rolling 22-working day average of a basket of Cinto, Brent, and Dubai benchmark crudes, adjusting price ceilings if this average varied by more than 4 percent. The formula was not applied at several points in time, leading to large losses for the refineries and causing fuel shortages at times. There are two threshold levels for crude oil prices that would trigger government intervention: (1) above US\$80 per barrel, firms are asked to reduce processing margins; and (2) above US\$130 per barrel, unspecified “fiscal” measures are to be implemented.
- March 2013 The government shortened the averaging period from 22 days to 10 days, abolished the 4-percent crude price band, and switched from the basket of benchmark crudes to China’s crude oil import slate. Price ceilings are not changed if world oil price fluctuations do not exceed 50 yuan per tonne (about US\$1 per barrel of oil). These pricing rules were not always followed.
- January 2015 On January 4, the government removed its controls on the prices of 24 commodities and services, but did not include gasoline, diesel, and jet fuel in the list. Analysts and market players debated the pros and cons of price deregulation (*Platts Commodity News 2015a*):
- Argument against deregulation: Lack of competition. Given large market concentration at the refining level dominated by two state-owned oil companies and restrictions on independent refineries to import crude oil, removal of price ceilings could lead to prices significantly above world market prices. Even if fuel imports were completely deregulated, market concentration at the distribution level could persist for a long time, limiting price competition. One estimate provides that independents control only 1 percent of retail outlets.
- Arguments for deregulation: Competition will emerge if the government withdraws from the sector. According to one industry estimate, there was 3 million barrels per day of unused independent refining capacity out of the total refining capacity of 10

million daily barrels in 2014. There is an anti-monopoly law in China that can be invoked to discourage anti-competitive behavior.

In December 2015, the National Development and Reform Commission (NDRC)—the agency in charge of fuel pricing policy—for the first time since March 2013 did not adjust prices against the backdrop of the continuing oil price slide, saying that keeping price stability would help prevent faster growth of oil consumption and reduce air pollution. The NDRC added that it would accelerate improving the fuel pricing system in the new environment of low oil prices. In October 2015, the Central Committee of the Communist Party of China and the State Council issued a document entitled “CPC Central Committee and State Council on promoting the reform of the price mechanism,” indicating that oil, gas, and electricity prices would be largely deregulated by 2017, except where economic regulation is needed to regulate natural monopolies, and the government would fully implement a market-driven pricing regime with economic regulation for natural monopolies and anti-trust legislation by 2020 (Reuters 2015b, Huanbao 2015).

Recently, the government has also begun liberalizing imports and exports. Independent refineries were not permitted to import crude oil and had to buy heavy fuel oil, but in 2015 several were granted permits to buy imported crude oil. In November 2015, the Ministry of Commerce stated that the government would permit 87.6 million tonnes of crude oil imports by private trade in 2016, equivalent to about 1.6–1.7 million barrels per day (SECB 2015). In the same month, the government for the first time authorized independent refiners to export refined fuel products (Reuters 2015a). Because the success of fuel price deregulation depends, amongst others, on having fair and rigorous competition in the market, liberalization of oil trade is an important component of sector and pricing reform.

The impact of steadily improving pricing practice on the financial health of the midstream petroleum sector can be seen from the operating profits of Sinopec and PetroChina. The losses declined steadily from 2011 to 2013 (Table 7). The companies attributed the losses 2014 to the time lag between procurement of crude and sales of refined products when oil prices were declining.

Table 7: Operating profits of the refining segment of Sinopec and PetroChina, US\$ million

Company	2011	2012	2013	2014
Sinopec	5,535	1,814	1,399	-317
PetroChina	9,295	5,338	-766	-1,162

Sources: Sinopec and PetroChina annual reports.

Wholesale price ceilings for gasoline and diesel are set at least 300 yuan per tonne (about US\$0.04 per liter) below the retail price. By guaranteeing a spread between wholesale and retail prices, regulated wholesale prices help ensure the viability of China’s private gas filling station network. Some analysts believe that this allows private stations to provide limited price competition through small but noticeable discounts relative to the retail price cap and prices offered by Sinopec and PetroChina, the two national oil companies with a large combined market share in the downstream oil sector.

Government, military, and some other customers are eligible for nationally-uniform government and military prices that are about 1,000 yuan per tonne (about US\$20 per barrel) below retail price ceilings for gasoline and diesel. Fishing, agricultural, forestry, and land reclamation users have longstanding

“temporary” access to government and military preferential diesel prices, while the State Petroleum Reserve has access to preferential prices for all fuel types. Ex-refinery prices are also set administratively for all fuel sales to these users.

A 17-percent VAT and an excise tax are imposed on fuels. Between November 2014 and January 2015, the government took advantage of falling world oil prices and increased the excise tax on gasoline and diesel (Table 8).

Table 8: Excise tax on gasoline and diesel in yuan (US\$) per liter

Fuel	Before increase	Nov 29, 2014	Dec 13, 2014	Jan 13, 2015
Gasoline	1.00 (\$0.16)	1.12 (\$0.18)	1.40 (\$0.23)	1.52 (\$0.24)
Diesel	0.80 (\$0.13)	0.94 (\$0.15)	1.10 (\$0.18)	1.20 (\$0.19)

Sources: Government announcements.

The prices of LPG at the refinery gate and gas processing plants are limited nationwide to 92 percent of government and military gasoline rates, with wide price variation. Local authorities limit household LPG retail prices. Figure 5 shows the price of LPG for residential use in Beijing, which is low.

Rail, public buses, and inter-island and rural passenger transport are eligible for a separate set of preferential fuel prices that must be set at least 400 yuan per tonne (about US\$0.55 per liter of diesel) below the retail in each province. Provinces with large differences in distribution costs, such as Sichuan, can implement up to two additional pricing regions with prices higher than the provincial capital.

Various forms of compensation have been offered in times of high world prices. To help certain industries cope with fuel price increases, the government in April 2009 announced that it would subsidize public transportation, fisheries, and state-owned forestry firms when the state-set ex-refinery prices for gasoline and diesel exceeded 4,400 yuan (US\$700, or about US\$0.94 per liter) and 3,870 yuan (US\$615, or US\$0.73 per liter) a tonne, respectively. When the ex-refinery price of gasoline was between 4,400 and 5,480 yuan (US\$870) a tonne and that of diesel between 3,870 yuan and 5,070 yuan (US\$805), the central government would pay for all fuel costs above the threshold prices for individual fishermen or fishing enterprises operating inshore or inland, as well as state-owned forestry and urban public transportation companies, and half of the surplus costs for rural road and water transportation companies and ocean fishing firms. Above these prices, subsidies are triggered, taking additional costs as a basis. In March 2012, the government announced a monthly subsidy of about 300 yuan (US\$48) for taxi drivers across the country.

Gas prices

Since 2013 until recently, China had a two-tier pricing system for natural gas, consisting of two city-gate prices: one for existing gas (91 percent of the total volume of gas in 2012) and the other for incremental gas. Incremental gas was priced at 85 percent of the import cost of alternative fuels (60 percent fuel oil and 40 percent LPG). The government took steps to move domestic gas prices closer to market-based levels for non-residential consumers by raising the prices of the existing gas, eventually reaching the level for incremental gas. Non-residential gas prices were raised by 20.5 percent in September 2014, bringing prices to 2.35 yuan per m³ (US\$10.7 per mcf), or a 38.6-percent increase from May 2013 prices.

The fertilizer industry was exempted from higher prices. In April 2015, the government merged the two sets of prices into one for non-residential consumers and deregulated the prices of natural gas supplied directly to industrial users. To merge the two prices, the government increased the price of existing gas by 0.04 yuan/m³ (US\$0.18/mcf) and decreased the price of incremental gas price by 0.44 yuan/m³ (US\$0.20/mcf) (Xinhua 2015a).

The NDRC announced in March 2014 that the residential sector, which had been shielded from price increases between 2013 and 2014, would move to a three-tier tariff system by the end of 2015. The first tier would cover 80 percent of gas usage, the second tier the next 15 percent, and the last tier the remaining 5 percent. The notional relative prices for the three tiers would be in the ratio 1:1.2:1.5, although the specifics of the pricing system would be left to local governments and public hearings.

Shanghai introduced increasing block tariffs and raised residential gas prices rapidly (Table 9). In September 2015, the NDRC reported that 50 cities from 13 provinces or municipalities had adopted multi-tier pricing of residential natural gas (Xinhua 2015b). The new three-tier tariffs for Beijing, which came into effect in January 2015, are also shown in Table 9.

Table 9: New residential gas prices in Shanghai and Beijing

Shanghai effective September 2014			Beijing effective January 2016		
Annual volume	Yuan/m ³	US\$/mcf	Annual volume	Yuan/m ³	US\$/mcf
Less than 310 m ³	3.0	13.84	<300 m ³	2.28	10.00
Between 310 m ³ and 520 m ³	3.3	15.22	300–500 m ³	2.50	10.97
Greater than 520 m ³	4.2	19.37	>500 m ³	3.90	17.11

Sources: Reuters 2014b for Shanghai, Energy Research Institute for Beijing.

In November 2015, the NDRC announced a new policy for gas pricing and also cut gas prices for non-residential consumers by about 30 percent to respond to falling gas prices in Asia. According to customs data, the average price of LNG delivered to China fell from \$11.15/mmBtu in January to \$7.39/MMBtu in September 2015. Non-residential city-gate prices were lowered by 700 yuan per thousand cubic meters, or about US\$3.35/mmBtu. Under the new policy, buyers and sellers will be able to negotiate final delivered prices starting in November 2016. The pricing policy has changed from setting ceilings to setting benchmarks for non-residential gas prices in each region. For the first year, prices can be up to 20 percent higher than the new benchmark gate prices (*Platts LNG Daily* 2015).

Colombia

The Government of Colombia established a fuel price stabilization fund in 2008, named Fondo de Estabilización de Precios de los Combustibles (FEPC). The fund soon began to build a deficit, and as of January 2015, the deficit stood at Col\$4.8 trillion (US\$2 billion). In September 2004, the Constitutional Court ruled that levying a fee on fuels to finance FEPC was unconstitutional, prompting the government to include two articles in the Tax Reform Act of 2014 to continue contributions to FEPC following the principle of over-recovery of costs in times of low world prices paying for deficits from under-recovery in times of high world prices (*Portafolio* 2015a). In November 2015, however, the Constitutional Court

ruled that the new tax was also invalid, citing procedural errors and depriving FEPC of this source of financing (*Portafolio* 2015b).

The fund with a large deficit notwithstanding, retail prices of gasoline and diesel in Colombia have not been low, in part because of taxes and surcharges (which are higher for gasoline than for diesel). In June 2014, for example, the surveyed retail prices of diesel and gasoline (with a minimum octane index of 87, called Gasolina Extra) in Bogotá averaged US\$1.16 and US\$1.50 per liter, respectively (SIPG 2015). The gasoline price was considerably higher than the U.S. average retail price of US\$0.98 per liter in the same month, and the diesel price in Colombia was also higher than the U.S. average of US\$1.03 per liter (U.S. EIA 2015).

Petroleum products are among the heavily trafficked smuggled goods from República Bolivariana de Venezuela. In June 2015, the Colombian parliament passed a law tightening penalties for smuggling.

Côte d'Ivoire

Fuel prices are subject to ceilings, uniform throughout the country for gasoline, kerosene, and diesel. LPG prices were frozen between 2008 and January 2013, and the gasoline price between April 2010 and January 2013. The price of diesel was frozen longer, fixed at CFAF 615 (US\$1.16) per liter until December 2014, when the price was lowered to CFAF 600 (US\$1.13) per liter.

The government began applying an automatic price adjustment mechanism to gasoline in April 2013. Prices are adjusted only when changes in international prices exceed specified thresholds, with some discretionary powers exercised by the government. Price smoothing is achieved by adjusting the taxable portion of the price on which tax rates are applied. For revenue protection, there is a floor to the tax base. Gasoline cross-subsidizes diesel when the price of diesel reaches CFAF 615. Prices of gasoline and diesel were lowered in December 2014, January 2015, and February 2015, but raised in March and April 2015, when the price of diesel again reached CFAF 615 per liter. After five months of no price adjustments, the prices were lowered in succession: in September 2015 to CFAF 680 (US\$1.16) per liter of gasoline and CFAF 580 (US\$0.99) per liter of diesel, in October 2015 to CFAF 650 (US\$1.11) and CFAF 570 (US\$0.97), respectively, and in November 2015 to CFAF 630 (US\$1.03) per liter of gasoline while the price of diesel remained unchanged at CFAF 570 per liter.

The power sector uses natural gas and heavy vacuum oil. Low rainfalls in recent years have reduced the availability of low-cost electricity in the form of hydropower, and increased the need for a more expensive form of power generation from heavy vacuum oil. This has led to mounting debts. Some of the gas (gas from domestic gas fields corresponding to the government's 15-percent equity share) and heavy vacuum oil provided by the local refinery used in power generation is provided free of charge to the power utility. Free gas is estimated to have amounted to 0.9 percent of GDP in 2011. Delays in reimbursement for heavy vacuum oil by the government aggravates the already poor financial situation of the local state-owned refinery. Both the refinery and Petroci, state-owned oil company (which supplies natural gas to the domestic market), made large losses in 2014, and Petroci was unable to pay its taxes and 2013 dividends. The government is focusing on investing CFAF 5.3 trillion (US\$9 billion) to revamp and expand the power infrastructure, which will eliminate the need for heavy vacuum oil, while committing to settle arrears and timely reimbursement of fuel subsidies (IMF 2012b, 2014a, 2014f, 2014i, 2015h).

Ecuador

The Government of Ecuador has frozen the maximum retail prices of regular gasoline, diesel, and LPG for 12 years. Only the price of super gasoline is permitted to float, but its price had not been changed for six years before an increase of US\$0.02 per gallon (US\$0.005 per liter) in October 2015. The price of LPG sold in 15-kg cylinders is exceptionally low at US\$0.11 per kg (US\$1.60 per cylinder). The LPG subsidy started in the 1970s, and by now the population has grown accustomed to virtually free cooking gas. The government said in 2014 that it planned to increase the refill cost of a 15-kg LPG cylinder from US\$1.60 per cylinder to \$15–20 by 2017 (*Elpais* 2014).

The central bank reported that the country had spent US\$6.1 billion in 2014 on fuel imports, against which consumers had paid US\$2.2 billion. Subsidies are falling only because of low world oil prices, and not because of any subsidy reform program by the government.

Arab Republic of Egypt

The budgetary allocation for fuel subsidies in Egypt reached nearly 7 percent in FY 2012/13 (July 2012 to June 2013) before falling in the subsequent years (Table 10). The price of gasoline with 80 RON was frozen between 1992 and July 2014, by which time its value in U.S. dollars had fallen to US\$0.13 per liter. Other fuel prices were frozen between 2008 and 2013, when the prices of fuel oil and LPG were raised. The total energy subsidies reached the highest level in 2013/14, amounting to US\$18 billion for fuel and another US\$3.5 billion for electricity, valued at cash costs (only imported fuels are valued at market prices, while domestic fuels are valued at production costs). The government estimates that, if valued at international prices, the economic value of energy subsidies would be more than double the financial subsidy figures reported in the budget. Low energy prices have historically directed investments in favor of energy- and capital-intensive industries (EEDC 2015a).

Table 10: Budgetary cost of fuel subsidies in Egypt

Unit	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15	FY 2015/16 ^a
LE billion	95.5	120	128.3	126.2	72	61.7
US\$ billion	16.4	20.0	19.9	18.1	9.8	7.9
% of GDP	4.9	6.1	6.9	6.0	3.0	2.2

Sources: IMF 2015b for 2010/11 and 2011/12, government for 2012/13 to 2014/15, Economist Intelligence Unit 2015 for 2015/16.

a. Approved budget.

The government raised power tariffs for every consumer category and the prices of most fuels in July 2014. The fiscal savings from the combination of the 2014 price increases and the fall in international petroleum product prices were about US\$7 billion, but prices remain highly subsidized. For example, a 78-percent increase in July 2014 raised the retail price of 80 RON gasoline to only US\$0.22 per liter, and a 41-percent increase saw the price of 92 RON gasoline rise to US\$0.36 per liter. Natural gas prices to industries range from about US\$3 per mmBtu for the power sector after a 58-percent increase to US\$8 per mmBtu for cement after a 33-percent increase. Natural gas tariffs for households begin at about US\$1.50 for the lowest of the three increasing tariff blocks, while bottled LPG for residential use (not raised in July 2014) costs a mere US\$0.084 per kg. Diesel fuel for all sectors is US\$0.24 per liter despite a

64-percent increase. The electricity lifeline rate for monthly consumption of less than 50 kWh is US\$0.01 per kWh, and tariffs are about US\$0.02 per kWh for monthly consumption up to 200 kWh.

Price increases in July 2014 were part of major energy subsidy reforms announced by the government, in which the government had planned to reduce the total energy subsidy bill to 0.5 percent of GDP in five years, ending in FY 2018/19. The subsidies that remain at the end of the five-year reform period will cover LPG and electricity targeted to the poorest segment of the population (EEDC 2015b). However, the liquid fuel price increases planned for July 2015 were not implemented. In December 2015, Prime Minister Sherif Ismail announced that the government would reduce energy subsidies to 30 percent of the subsidy amount in 2014 (*Egypt Independent* 2015). This revision in the subsidy reform policy may double the subsidy amount in 2019 relative to the original target of 0.5 percent of GDP.

For the power sector, the government issued a preliminary time table in July 2014 for raising tariffs to cost-recovery levels, decreasing subsidies by about LE 7 billion (US\$1 billion) every year from LE 27 billion (US\$3.7 billion) in FY 2014/15 to zero in FY 2018/19. Fiscally neutral cross-subsidies between customer groups of about US\$1.3 billion are envisaged to remain (EEDC 2015a). In August 2015, electricity prices were adjusted, the size of the adjustment depending on the consumer category. Certain categories, mostly off-peak rates for industries, were lowered, but most saw increases, as much as 57.5 percent for the tariff during peak hours for certain industries connected to high-voltage lines. The tariffs for residential consumers with monthly consumption not exceeding 200 kWh were not changed. According to the government's estimation, these tariff adjustments would save LE 12 billion (US\$1.5 billion) in FY 2015/16.

The power tariff increases in the two most recent fiscal years—an average of 31 percent in July 2014 and 19 percent in July 2015—raised utility revenues by an estimated 70 percent compared to the pre-reform levels. However, Egypt became a net importer of natural gas in 2015, raising the risk of not being able to reach cost-recovery by FY 2018/19.

Smart cards are being used to improve subsidy delivery and targeting for liquid fuels. Over time, quantities outside the quota for beneficiaries will be sold at higher prices, initially covering cash costs and later at parity with international prices (import- or export-parity depending on the trade balance for each fuel) (EEDC 2015b).

Late subsidy reimbursements and arrears by various purchasers have severely harmed the balance sheets of the EEHC and EGPC, despite the EGPC's receiving free crude oil and natural gas as part of its production sharing contracts. Both EEHC and EGPC have large outstanding receivables. For the EEHC, more than 80 percent are due to non-payment by government ministries and state-owned enterprises—US\$3.6 billion worth of subsidy arrears with finance and power ministries, and another US\$0.7 billion of unpaid bills from public entities. As for the EGPC, close to 90 percent of its outstanding receivables in 2013/14 were due to delayed payments from public entities, including the EEHC, amounting to US\$4 billion. In addition, the EGPC's subsidiaries failed to transfer their net income to the company in cash, leading to further arrears of about US\$0.9 billion (EEDC 2015a).

The EGPC and EEHC have developed large arrears to their suppliers. By the end of FY2013/14, the arrears to international oil companies had grown to US\$6 billion, and then declined to US\$3.1 billion six

months later (EEDC 2015a). Meanwhile, in the face of acute gas shortages and growing power outages, the government began diverting high levels of gas produced by foreign companies to the domestic market. By 2014, gas exports had all but ceased, and BP Group declared force majeure in January 2014 for failing to meet its export commitments (*Financial Times* 2014). These developments eroded investor confidence in upstream oil and gas, turning Egypt into an importer of LNG in 2015.

Before the collapse of the world oil price, the government had planned to allocate about half of the fiscal savings from subsidy reform—US\$3.6 billion—to pay for health, education, and social protection programs. US\$0.7 billion would specifically target social protection programs. In FY 2013/14, spending on health and education amounted to about US\$17 billion. The government has already doubled the maximum benefit allotted under the Social Solidarity Pension—currently the country’s largest welfare scheme—and is also committed to expanding its coverage substantially and improving its targeting. The government is also preparing to launch two cash transfer programs, one conditional cash transfer program for households with young children, and the other an unconditional cash transfer program for the elderly poor and the disabled. To identify targeted populations more accurately, the government is exploring proxy-means testing, poverty mapping, and the use of smart cards to facilitate enrollment and payment automation (EEDC 2015a).

The government is also developing a broad-based communications plan to build consumer awareness about unintended harmful effects of subsidies and alternative uses of the savings from subsidy reduction. The analytical work underpinning the communications strategy was extensive:

- More than 2,000 households were surveyed about their energy use, understanding of subsidies and potential reform measures.
- Focus group discussions were held with a wide range of stakeholders, including transport operators, energy-intensive small and medium enterprises, small farmers, and youth.
- Policy makers, business leaders, and industry representatives were interviewed about their attitudes toward and appetite for energy subsidy reform.
- A computable general equilibrium model was used to assess likely economic effects of reform on various stakeholders.

The findings of the survey conducted in April 2014—before the large price increases of July 2014—were revealing. Two-thirds of the respondents believed that energy prices in Egypt were too high. Two-thirds also had no idea of the scale of energy subsidies. But when presented with budget allocations for energy subsidies, three-quarters of the respondents reported that it was a bad use of public funds. Two-fifths of the respondents had serious or very serious concerns about the government’s ability to manage the savings from subsidy reduction effectively. These findings demonstrate the importance of informing the public, and winning the public’s confidence by strengthening budget planning, budget execution, and social protection measures.

Gabon

The IMF estimates that fuel subsidies in Gabon amounted to CFAF 229 billion (US\$450 million) in 2012, 220 billion (US\$450 million) in 2013, and 125 billion (US\$260 million) in 2014, corresponding to 2.8, 2.6, and 1.5 percent of GDP, respectively. The government has historically subsidized fuel prices, adjusting them infrequently. The government in January 2014 eliminated industrial diesel subsidies except for

food processing, fishing, cement production, and forestry. The government also began adding import duties in the calculation of the reference market price (IMF 2015d). Gabon has a Stabilization and Equalization Fund, which serves two purposes: (i) dampening oil price volatility, and (ii) equalizing prices across regions by charging more in low-cost areas to cross-subsidize more distant markets with higher costs of transporting petroleum products (<http://www.caistabgabon.com/>).

On January 29, 2015, the Council of Ministers met for 13 hours and took a large number of decisions. Among them were decisions concerning the downstream petroleum sector:

- Complete elimination of subsidies for gasoline and diesel, while taking social impact into account
- Retention of subsidies for kerosene and LPG
- Liberalization of petroleum product imports
- Implementation of mitigation and accompanying measures for operators, households, and strategic budgetary reallocations
- Establishment of a regulatory authority in charge of petroleum product pricing
- Investment in storage capacity for petroleum products
- Reform of the Stabilization and Equalization Fund to respond to new economic challenges
- Creation of a stabilization fund for petroleum resources to stabilize those budgeted resources

A subsequent meeting of the Council of Ministers on April 10, 2015 endorsed a decree that re-organizes the National Commission on Petroleum Product Prices. The decree makes the commission a permanent inter-ministerial body with a plenary assembly and a technical secretariat.

Throughout 2015, the retail prices of gasoline, kerosene, diesel, and LPG sold in 12.5-kg cylinders were not changed, remaining the same since 2009. The price of kerosene has been frozen longer. In November 2015, the government—which will hold presidential and parliamentary elections at the end of 2016—said that, although prices should have been increased, it has decided out of socioeconomic considerations to suspend subsidy reform and maintain the same prices for the rest of 2015 and in 2016. The subsidies in 2015 are said to have amounted to CFAF 42 billion (US\$71 million) and are forecast to grow to CFAF 57 billion (about US\$100 million) in 2016 (*Gabon Economie* 2015).

Ghana

Since 2001, the Government of Ghana has on several occasions introduced an automatic price adjustment mechanism to set price ceilings for liquid fuels, but has not managed to sustain it for long. For the third attempt, the government passed a law in 2005 that established the National Petroleum Authority, which was given the task of calculating reference market prices and making automatic price adjustments. The same law also established a Unified Petroleum Price Fund to equalize transport costs by charging a small fee. In 2015, the charge for the fund was 0.10 or 0.11 cedis a liter for gasoline, kerosene, and diesel, and 0.12 cedis per kg for LPG, or about US\$0.03 per relevant unit.

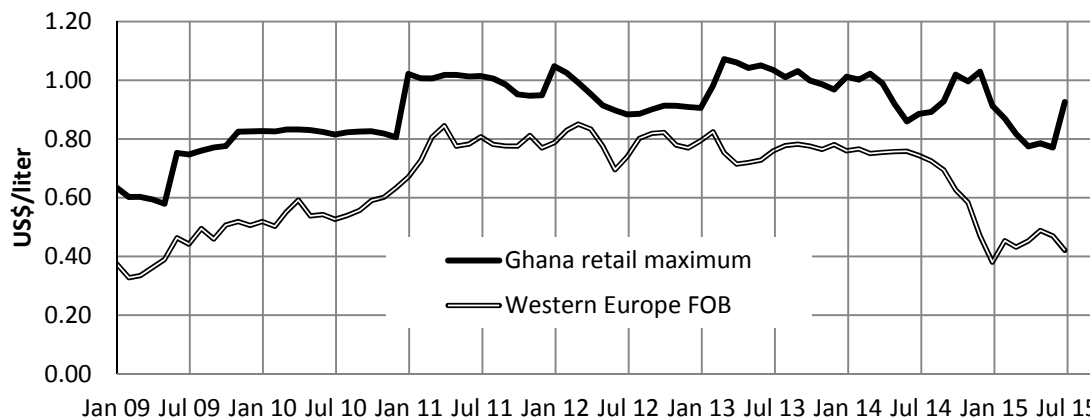
The government began reviewing fuel prices twice a month in October 2007, but suspended price adjustments when oil prices showed clear signs of soaring in May 2008. Adjustment suspension remained until November 2008. Despite low oil prices in 2009, which should have made upward price adjustments easier, adjustments became infrequent. Only three adjustments were made in 2009, none

in 2010, two in 2011, and one in 2012, with no adjustments made for a year between February 2012 and February 2013. Meanwhile, in addition to rising world prices, the local currency began to depreciate markedly in 2011. At the beginning of 2008, the exchange rate was 0.97 cedis to the dollar. The cedi depreciated to 1.5 to the dollar in 2011, 2.0 in October 2013, 3.0 in July 2014, and 4.3 in June 2015, before recovering some.

In November 2014, Ghana introduced a new tax. Called a special petroleum tax, it is 17.5 percent of the ex-depot price for gasoline, diesel, kerosene, and LPG. Premix (gasoline with 82 RON for exclusive use by fishing boats) and residual fuel oil are exempt from the tax. Because world petroleum product prices were falling at the time, the adoption of this large tax increased retail prices by only 3 percent, with the exception of LPG for which the price fell by 9.5 percent. Within six weeks, fuel prices were decreased by 10 percent or more on January 1, 2015.

The failure of the National Petroleum Authority to keep up with rises in world oil prices until recently can be seen in Figure 13, which plots price ceilings for diesel since 2009. Retail prices in Ghana needed to be substantially higher than the FOB price to account for transportation costs, various charges, taxes, and profit margins. The budget tables available on the government website (<http://www.mofep.gov.gh>) show that subsidies for petroleum products amounted to an estimated 623 million cedis (US\$336 million) in 2012, 120 million cedis (US\$58 million) in 2013, and 328 million cedis (US\$108 million) in 2014, with 50 million cedis set aside for fuel subsidies in 2015. The actual spending was 474 million cedis (US\$138 million) in 2014 but zero during the first six months of 2015 (Ghana 2015). In addition, there is a levy on all fuels except kerosene and premix—ranging from 0.03 cedis (US\$0.01) a liter for local marine diesel to 0.08 cedis (US\$0.02) per liter for gasoline and diesel—to help pay off the debt of the sole, state-owned refinery in the country.

Figure 13: Comparison of retail diesel prices in Ghana with Western European FOB diesel prices



Sources: <http://www.npa.gov.gh> for Ghanaian prices, industry sources for Western Europe.

Infrequent price adjustments have sometimes been followed by sharp price increases. In June 2009, prices were increased by 30 percent across the board for all fuels. In January 2011, prices were again increased by 25 or 30 percent, with the exception of kerosene and premix, the prices of which were not changed. In February 2013, the price of premix was not changed but the prices of all other fuels were raised, ranging from 15 percent for kerosene to 20 percent for gasoline and diesel and 50 percent for

LPG. The last large price increases in July 2014 saw prices of most fuels rise by between 22 percent and 27 percent, except for fuel oil and LPG, the prices of which rose by 16 percent (<http://www.npa.gov.gh>).

The government's inability to reimburse bulk oil distributors on time for subsidies has resulted in cash flow problems and their inability to import sufficient petroleum products, causing serious fuel shortages. Fuel shortages were reported in June 2014, and again in September 2014 (Reuters 2014a; *Business World Ghana* 2014).

A cross-subsidy levy of 0.05 cedis (US\$0.01) per liter of gasoline were charged for years, with negative levies for all other fuels. The positive levy on gasoline was nowhere near sufficient to cross-subsidize all other fuels. For example, in 2014, the net revenue for the government from cross-subsidy levies was -28.5 million cedis (-US\$7.5 million), with LPG and diesel dominating the losses (Table 11).

Table 11: Net impact of cross-subsidies in Ghana

Item	Gasoline	Kerosene	Diesel	LM diesel	Fuel oil	LPG	Premix
Cross-subsidy	50.000	-48.449	-26.987	-62.287	-13.937	-184.042	-3.608
Consumption	1,479,707	164,373	1,685,868	63,552	26,947	241,548	75,501
Revenue	74.0	-8.0	-45.5	-4.0	-0.4	-44.5	-0.3

Source: World Bank staff calculations based on the data posted at <http://npa.gov.gh>.

Notes: Cross-subsidies are in cedis per kiloliter except cedis/tonne for LPG. Consumption is taken from the statistics for Jan–Sep 2014 and is in kiloliters except for LPG, which is in tonnes. Revenue is in millions of cedis. Premix is a fuel for fishing. LM = local marine.

Illegal diversion of premix, a heavily subsidized fuel for fishing, has been problematic for decades. Premix fuel is gasoline with low octane and is exempt from a special petroleum tax of 17.5 percent applied to all other fuels except fuel oil, as well as the excise duty, the refinery debt recovery levy, and several other charges. Its ex-refinery price, before any taxes and charges, was half of that of gasoline before the price of gasoline was deregulated. For many years, the price of gasoline has been double—and between 2011 and 2013 even triple or quadruple—the price of premix fuel, creating enormous scope for commercial malpractice and illegal gains. The government, in announcing the establishment of the National Premix Committee, summarized the situation at the end of 2008 as follows (MFA undated):

- Points of sale for premix proliferated, increasing from 128 in 2001 to about 900 in 2008.
- Corruption related to the administration of premix fuel became “uncontrollable,” with rampant diversion to illegal markets. Adulteration of automotive gasoline with premix was financially attractive but damaging to vehicles.
- Eligible purchasers of premix faced serious shortages.

As of 2015, the price difference between gasoline and premix was a factor of two. Commercial malpractice has not only continued, but National Premix Committee members have even been accused of participating in illegal diversion of premix fuel and making financial gains, leading the central regional wing of the ruling party to appeal to the president to dissolve all premix committees (GhanaWeb 2015a).

In June 2015, the National Petroleum Authority announced that it would deregulate petroleum product prices, with the exception of premix fuel and residual fuel oil. The announcement stated that the debt to bulk oil distribution companies stood at more than “\$800 million”. There were 27 bulk distribution

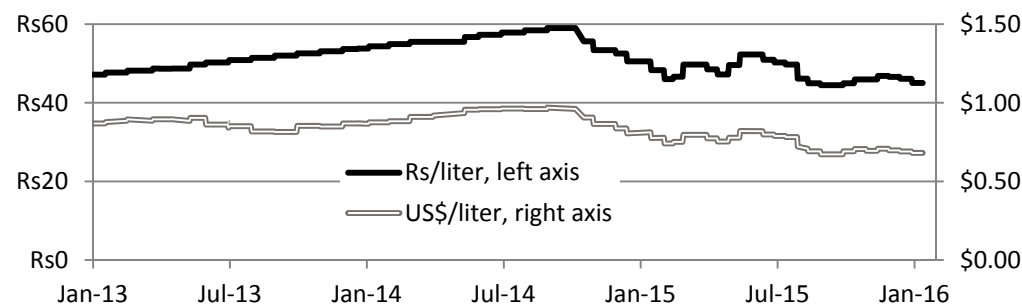
companies and 120 oil marketing companies (NPA 2015). The media reported evidence of “stiff competition at the pump” soon thereafter (*Africa Report* 2015). As one indication of continuing adverse effects of price subsidies, the Ghana Chamber of Bulk Oil Distributors reported at a petroleum conference in November 2015 that the weight of the subsidies that the government had not yet reimbursed was straining the marketers’ ability to access funding to compete and sustain operations effectively (GhanaWeb 2015b).

The disruptions to gas supplies from Nigeria via the West Africa Gas Pipeline have forced greater reliance on oil and substantially increased the cost of power generation, leading to large subsidies in the power sector. Tariffs below cost recovery in turn have caused payment arrears to Nigeria, which in turn have contributed to the volume of gas supplied being cut, intensifying reliance on oil. After raising power tariffs in October 2013 by 78.9 percent for all consumer categories except residential consumers consuming less than 50 kWh a month, the Public Utilities Regulatory Commission has been refraining from adjusting prices fully to reflect costs. For example, for the quarterly adjustment effective April 2015, the Commission stated that the average calculated tariff increase needed was 31.6 percent but it decided to limit the increase to 2.6 percent. For the adjustment effective July 2015, the calculated required average increase was 51.7 percent but the actual increase implemented was 0 percent (www.purc.com.gh).

India

India ended the gasoline price subsidy in June 2010 and began raising diesel prices by Rs 0.5 (US\$0.01) per liter a month in January 2013 (Figure 14) in order to reduce price subsidies. Because of exchange rate fluctuations, this price increase was not always sufficient to keep up with world prices, but the precipitous fall in global petroleum product prices in the last few months of 2014 enabled the government to deregulate diesel prices in October while lowering them on the domestic market. At the same time, the government raised excise duties on gasoline and diesel in succession in October, November, and December 2014. The excise duty on gasoline with 92 RON was increased from Rs 9.48 (US\$0.16) per liter in September 2014 to Rs 17.46 (US\$0.28)/liter in December 2014, and that on diesel from Rs 3.56 (US\$0.06) per liter to Rs 10.26 (US\$0.16) per liter during the same period. The government also increased the “clean energy cess”—a form of carbon tax levied in India as an excise duty under section 83 (3) of the Finance Act, 2010—on coal from Rs 50 (US\$0.83) per tonne to Rs 100 (US\$1.66) per tonne starting in July 2014, and the budget for the fiscal year beginning in April 2015 doubled the cess again to Rs 200 (US\$3.20) per tonne.

Figure 14: History of diesel prices in New Delhi, India



Source: <http://www.iocl.com/Products/HighSpeedDiesel.aspx>.

India has transformed LPG subsidies from price subsidies to conditional cash transfers. To contain growing subsidies, the central government initially limited the number of refills at heavily subsidized prices sold in 14.2 kg cylinders to six a year in September 2012. Refills above the limits were to be purchased at non-subsidized prices. The government was not able to withstand the political pressure to increase the limit, raising it from six to nine in January 2013, and from nine to twelve in January 2014.

Even non-subsidized LPG sold in 14.2-kg cylinders appears to be cross-subsidized. There are large economies of scale in transporting, storing, and bottling LPG. As a result, the unit price should decrease with increasing cylinder size. However, as Table 12 shows, LPG sold in 19-kg cylinders has consistently been more expensive per kg than that sold in 14.2-kg cylinders, a pattern that would not be expected in a completely deregulated market. This trend continued for the rest of 2015. The subsidized price used to calculate the cash transfer remained fixed for the entire year in 2015, and in fact has not changed much since June 2011.

Table 12: LPG prices in New Delhi in April 2015

Cylinder size	14.2 kg (subsidized)	14.2 kg (non-subsidized)	19 kg
Rs/kg	29.37	43.73	60.11
US\$/kg	\$0.47	\$0.70	\$0.97

Source: World Bank staff calculations based on data at <http://www.iocl.com/Products/Indanegas.aspx>.

The government has been issuing a 12-digit individual identification number called Aadhaar to every resident. Aadhaar is based on demographic and biometric information and serves as proof of identity and address. The government initially planned to launch a conditional cash transfer program for LPG by linking the transfer of LPG subsidies to the Aadhaar number in a scheme called the Direct Benefits Transfer for LPG (DBTL). The DBTL was launched on June 1, 2013 and eventually covered 291 districts, but was challenged in the Supreme Court, which ruled that the government could not make Aadhaar mandatory for receiving LPG subsidies because not everyone had been issued with an identity number. As a result, the government suspended the DBTL temporarily.

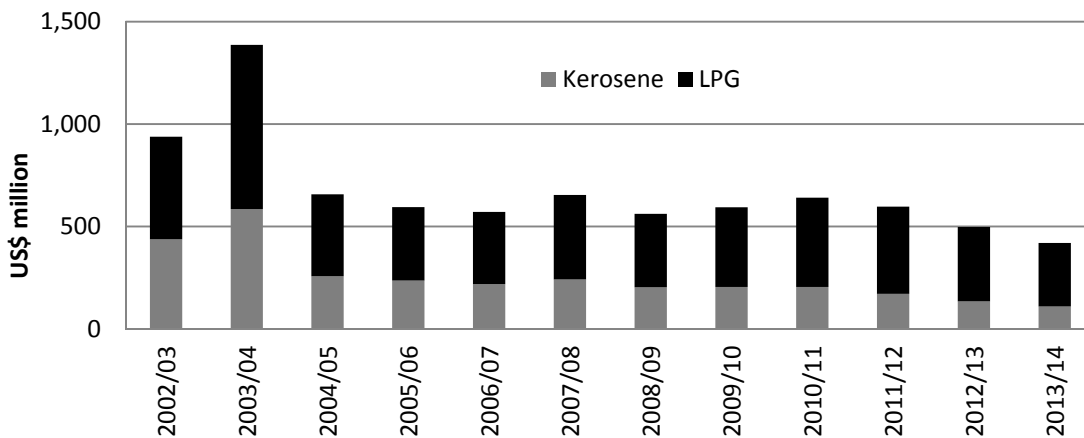
The government modified the DBTL and re-launched it in 54 districts on November 15, 2014, and nationwide on January 1, 2015. There are two ways of applying for subsidies, the first of which is to link an Aadhaar number to a bank account and the second of which is to provide banking details if a beneficiary does not yet have an Aadhaar number. Each beneficiary provides a 17-digit LPG customer number to his or her bank and on the application form. The cash transfers are not targeted and everyone, no matter how wealthy, is eligible. However, the Ministry of Petroleum and Natural Gas initiated a “#GiveltUp” campaign (<http://www.givitup.in/>), urging those who can afford LPG to give up the subsidy voluntarily.

The government designed the final phase of the national launch of the DBTL as follows. All consumers were to pay market prices after February 14, 2015. Those who have signed up for DBTL have price subsidies deposited in their bank accounts. The government would stop selling subsidized LPG altogether on February 15, removing an important source of market distortions and commercial malpractice (whereby businesses illegally purchase subsidized LPG, intended only for households). LPG consumers who applied for the scheme on or before May 14 could have subsidies transferred to their bank accounts retroactively. Starting on May 15, 2015, LPG is sold at market prices and the only way to receive subsidies is to become “cash-transfer compliant” by officially enrolling in the DBTL. As of

December 2015, 148 million customers had enrolled, having received 302 billion rupees (US\$4.7 billion), while 5.8 million had voluntarily given up the cash transfer (<http://petroleum.nic.in/dbt/index.php>). In its quarterly “Industry Sales Review Report” issued in June 2015, the Ministry of Petroleum and Natural Gas attributed the strong growth of bottled LPG for commercial use (35 percent) and automotive LPG (9.5 percent) between April and June 2015 to curbing of diversion of subsidized LPG following the full implementation of the DBTL (PPAC 2015).

The government is considering how a similar scheme could be applied to kerosene, which is heavily subsidized in India. The history of fiscal outlays for the two fuels are provided in Figure 15. In addition, three upstream oil and gas companies have been partially bearing the burden of fuel price subsidies since 2003. Uncertainty about the future subsidy-burden-sharing mechanism was reportedly one factor contributing to the deferment of the 5-percent stake sale of the state-owned Oil and Natural Gas Corporation, originally part of the 2014–15 divestment road map. In August 2015, the Minister of Petroleum and Natural Gas estimated that the upstream companies would need to cover Rs 50–60 billion (US\$0.8–0.9 billion) of kerosene subsidies in the fiscal year ending in March 2016, and added that the government would bear the entire burden of the LPG subsidy through the DBTL (Press Trust of India 2015).

Figure 15: Fiscal outlays for kerosene and LPG subsidies for household use



Source: http://ppac.org.in/content/150_1_Subsidy.aspx.

In the power sector, accumulated losses of distribution companies grew to US\$42 billion at the end of the fiscal year ending in March 2011. In September 2012, the Cabinet Committee on Economic Affairs approved the scheme for Financial Restructuring of State Distribution Companies, which restructured debts with support from state and central governments (India 2012). The Reserve Bank of India in its June 2015 report stated that the financial restructuring scheme had not been able to improve the financial health of distribution companies on account of their inability to comply with the requirements for eliminating the gap between the cost of supply and realized revenue, loss reduction, and regular tariff adjustment. Under the scheme, banks had restructured Rs 530 billion (US\$8.5 billion) of seven distribution companies’ exposure. The moratorium period for repayment of the principal amounting to Rs 430 billion (US\$7 billion) ended by March 2015. The Reserve Bank warned that the debt-servicing ability of power companies might remain weak in the near term (RBI 2015).

In 2015, the Power System Development Fund, set up in 2014, is used to subsidize LNG used in power generation. The assistance is for power plants with stranded capacity for lack of lower-priced domestic gas, with unit subsidies in FY 2015/16 limited to Rs 0.94 (US\$0.014)/kWh for stranded plants with no access to domestic gas and Rs 1.26 (US\$0.019)/kWh for plants receiving domestic gas but experiencing gas shortages. The amounts set aside for that purpose are Rs 35 billion (US\$530 million) in FY 2015/16 and Rs 40 billion (US\$610 million) in FY 2016/17. This scheme uses e-auctions in which bidders bid on the unit subsidy they are seeking (India 2015). E-auctions were conducted in May and September 2015.

Indonesia

The government has historically controlled and subsidized the prices of gasoline with 88 RON (“Premium”), diesel with maximum sulfur content of 0.35 percent (“Solar”), kerosene, and bottled LPG. Until recently, price adjustments were infrequent and not based on any rules. The prices of gasoline, diesel, and LPG were not changed between January 2003 and March 2005, when gasoline and diesel prices were raised. This was followed by very large price increases in October 2005 for gasoline, kerosene, and diesel. Prices were not adjusted again until May 2008, when they were raised by up to one-third. The prices were lowered in December 2008 and January 2009, and were not adjusted for four and a half years until June 2013, when gasoline and diesel prices were raised. The two previous price reductions meant that after the relatively large price increases in June 2013, the nominal prices were virtually identical to those in May 2008. The regulated prices remained constant until November 2014, when gasoline and diesel fuel prices were raised by another third (Table 13). Because of the weaker rupiah, although the price increases of November 2014 were relatively large in local currency units, they were only 6 percent for gasoline and 11 percent for diesel when converted to U.S. dollars.

Table 13: Price increases in Indonesia between 2005 and 2014

Fuel	Mar 2005	Oct 2005	May 2008	Jun 2013	Nov 2014
Gasoline	33%	88%	33%	44%	31%
Kerosene	0%	186%	25%	0%	0%
Diesel	27%	105%	28%	22%	36%

Sources: Government announcements of prices.

Note: Price reductions in December 2008 and January 2009 are not shown.

Energy subsidies grew until the end of 2014, when the world price of oil fell sharply. Budgetary transfers for power subsidies doubled and fuel subsidies quadrupled between 2009 and 2012 in nominal terms (Table 14). Energy subsidies have accounted for nearly 90 percent of total subsidies provided by the budget in recent years. LPG subsidies are growing rapidly because of the kerosene-to-LPG conversion program, intended to reduce kerosene subsidies while promoting adoption of a modern cooking fuel. The price of kerosene has been frozen since May 2008.

The kerosene-to-LPG conversion program, targeting households and microbusinesses, was launched in May 2007. The goal is to eliminate subsidized kerosene altogether by replacing kerosene with LPG. The free starter package includes a stove, a 3-kg cylinder, a hose, and a regulator. The wholesale price of LPG sold in 3-kg cylinders has been fixed at Rp 4,250 (US\$0.33)/kg since January 2008. After adding transportation and other costs, retail prices were upwards of Rp 5,700 in the West Java area in 2015. By contrast, during the same period, for LPG sold in 12-kg cylinders, Pertamina charged prices ranging from

Table 14: Budgetary support for energy subsidies in Indonesia

Item	2008	2009	2010	2011	2012	2013	2014
Rp trillion	223	95	140	256	306	310	342
US\$ billion	23	9	15	29	33	29	29
% of GDP	4.5	1.7	2.2	3.4	3.7	3.3	3.2
of which power subsidies	84	50	58	90	95	100	102
of which fuel subsidies	139	45	82	165	212	210	240
gasoline	44	15	38	80	107	100	109
diesel	44	10	22	53	65	73	75
kerosene	48	11	8	9	7	6	7
LPG	4	8	15	23	33	31	49

Source: IMF2013c, World Bank staff for 2013 and 2014.

Rp 10,933 (US\$0.87) to Rp 14,033 (US\$1.08) per kg, depending on the location and time (<http://www.pertamina.com>). This large difference in the LPG unit price between 3-kg and 12-kg cylinders provides powerful financial incentives for illegal diversion of subsidized LPG intended for households.

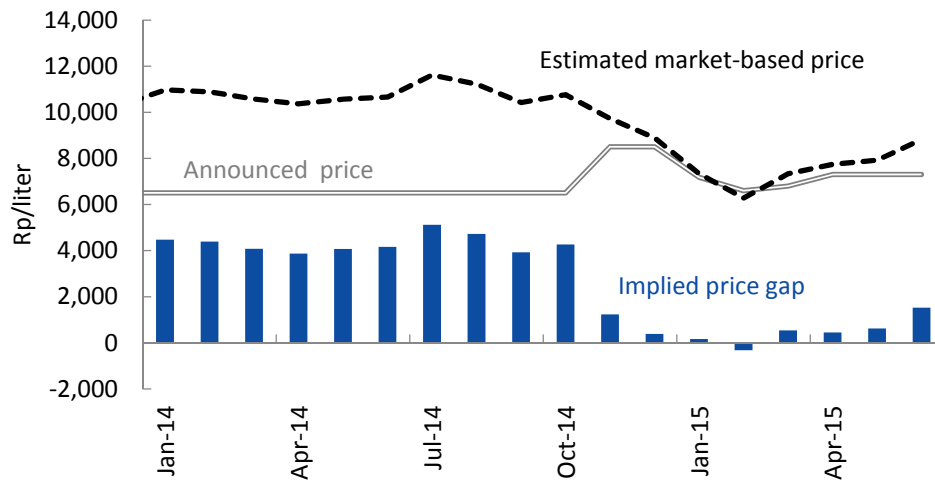
In 2005 and 2008, the government carried out large-scale, time-bound unconditional cash transfers targeting the poor and near-poor. In 2005, more than one-third of all households received Rp 100,000 (US\$11) a month for a total of 12 months in four tranches, equivalent to about 15 percent of the recipients' expenditures. Remarkably, the program was designed and deployed in less than five months. The top four expenditures using the transferred cash were rice, kerosene, debt repayment, and health, in that order (Widjaja 2009). In 2008, the government transferred Rp 100,000 a month to 18.5 million households for a total of nine months in three tranches. The administrative cost in 2008–2009 amounted to 6 percent of the benefits received. Partly on account of compressed preparation and delivery schedule, there were implementation problems, which led to criticism about lack of transparency in beneficiary selection, unfair distribution, and leakage to ineligible recipients. Informal levies were reportedly extracted from the cash transferred, amount to one-fifth to one-third of the benefit. The frequency of such informal deductions increased from about 10 percent in 2005–2006 to 50 percent in 2008–2009. These problems notwithstanding, the just-in-time cash transfers have been widely credited for general acceptance of the large price increases. Nearly two-thirds of the cash went to the poorest 40 percent. The recipients showed slightly improved education, labor, and health outcomes (World Bank 2012). Following two more rounds of large price increases in June 2013 and November 2014, these cash transfers continued, covering 15.5 million households each time. In 2013, the monthly amount transferred per household was Rp 150,000 (US\$14) for a total of four months (Rp 600,000 in total per household), and in 2014 it was Rp 200,000 (US\$16) for a total of two months (Rp 400,000 in total per household). In 2013, additional compensatory measures were adopted for a total budgeted outlay of Rp 29 trillion (US\$2.9 billion), including provision of additional rice to beneficiaries of the Rice for the Poor program and expansion of spending on financial assistance programs for poor students and on the conditional cash transfer program (World Bank 2013a).

On December 31, 2014, two important regulations governing fuel pricing and related policy issues were promulgated. The regulations defined three categories of petroleum products. The first is for fuels with subsidized, controlled prices. The second is for gasoline with 88 RON sold outside of Java-Bali. This

gasoline is not subsidized but the government will continue to control its price. The third is for all other fuels, including gasoline with 88 RON sold inside the Java-Bali region. This last category of fuel is neither subsidized nor subject to price control. Presidential regulation 191 of 2014 stated that in the future the price of kerosene would be fixed with a varying subsidy depending on the international price of kerosene, and diesel fuel would be subsidized at a fixed rate (Indonesia 2014a). Subsidized kerosene is for use by households living in areas not yet connected to electricity or to the subsidized LPG scheme, micro-businesses in areas not yet converted to subsidized LPG, and small fishing boats. Subsidized diesel fuel will be made available to micro-businesses, fisheries, transport, and such public services as hospitals. A 5-percent motor vehicle tax and a 10-percent VAT apply to gasoline and diesel. Energy Regulation 39 of 2014 and its amendments of January 2015 provide more details about the pricing policy. The price of kerosene will continue to be fixed at Rp 2,500 (US\$0.20), while the fixed subsidy for diesel fuel will be allowed up to Rp 1,000 (US\$0.08 at the time, declining to US\$0.07 by December 2015) per liter. Margins between 5 and 10 percent are permitted on unsubsidized fuels before VAT and the motor vehicle tax. The Minister of Energy and Mineral Resources is to set the prices of fuels in the first two categories at the end of every month for the following month and, if deemed necessary, more than once a month. The energy regulation also announced new prices effective January 1, 2015, which lowered gasoline and diesel prices (Indonesia 2014b). In May 2015, the Ministry of Energy and Mineral Resources issued Decision No. 2856 K/12/MEM/2015, which retroactively stated the pricing formula for retail prices of gasoline, diesel, and kerosene dating back to January 1, 2015.

Implementation of these regulations has been irregular, with mounting losses for Pertamina, the national oil company providing these fuels. Gasoline, diesel, and kerosene prices were announced on January 19, February 17, March 1 and 28, May 1, June 1, and September 1. Of these announcements, prices were not changed on February 17, May 1, June 1, and September 1. Gasoline and diesel prices were lowered on January 19, 2015, the gasoline price was raised by 3 percent on March 1, 2015, and gasoline and diesel prices were raised by 7.4 and 7.8 percent, respectively, on March 28, 2015. They remained the same for the rest of 2015, except when the diesel price was lowered by 2.9 percent in October as part of an economic stimulus package.

Assuming a delay of one month in passing through changes in FOB petroleum product prices in Singapore to the domestic market (Meyler 2009), the relevant FOB benchmark prices for gasoline increased by 21 percent and diesel by 5 percent between March and July 2015, while the currency depreciated by 3 percent, but the government did not adjust prices. As a result, while the subsidy for gasoline was officially ended beginning on January 1, 2015, the departure from the policy was sufficiently large as to lead to a growing price gap (Figure 16). Further, while the price of 88 RON gasoline in Java-Bali was supposed to be deregulated, it has been controlled by the government at a level that is Rp 100 (US\$0.007) per liter higher than the price outside of Java-Bali, contrary to the pricing regulations issued. By August 2015, Pertamina reported financial losses of Rp 12.6 trillion (US\$0.95 billion) for the first seven months of the year caused by the lack of adherence to the pricing formulas for gasoline and diesel (*Jakarta Globe* 2015).

Figure 16: Regulated vs. calculated gasoline prices in Indonesia

Source: Adapted from World Bank 2015b.

In announcing the decision not to change prices on September 1, 2015, the Ministry of Energy and Mineral Resources for the first time referred to averaging world prices over three, four, and six months. On September 30, 2015, the ministry announced several policy changes, apart from the decision to maintain the same prices. While stating that the new (but unchanged) prices are based on the three-month average international prices from June 25 to September 24, the retail prices were lower for gasoline and higher for diesel (after netting out the unit subsidy) than the calculated prices. Starting in January 2016, prices would be adjusted only once every three months. The net deficit/surplus would be calculated at the end of the fiscal year and reconciled. If there is a surplus, it would be transferred to the Energy Security Fund, and the government would find “a solution” in the event of a deficit (Indonesia 2015). On December 23, 2015, the Minister of Energy and Mineral Resources announced that, effective January 5, 2016, the gasoline price would be lowered from Rp 7,300 (US\$0.52) to Rp 7,150 (US\$0.51) per liter, and the diesel price from Rp 6,700 (US\$0.50) to Rp 5,950 (US\$0.43) per liter. The new fuel prices would include Energy Security Fund levies of Rp 200 (US\$0.014) per liter for gasoline and Rp 300 (US\$0.022) per liter for diesel—to finance renewable energy and energy security—and a subsidy of up to Rp 1,000 (US\$0.07) per liter of diesel. However, on January 4, 2016, the government announced that it would postpone the imposition of the levies and lower the gasoline and diesel prices by the corresponding amounts to Rp 6,950 (US\$0.50) and Rp 5,650 (US\$0.41) per liter, respectively.

Against the backdrop of uneven implementation of the government’s announced petroleum product pricing policy, there is another source of potentially large fuel subsidies: mandatory biofuel blending coupled with unit subsidies for ethanol and biodiesel. Energy Regulation 20 of 2014 sets ambitious targets for mandatory blending of biodiesel in petroleum diesel: 10 percent biodiesel by January 2015, 20 percent by January 2016, and 30 percent by January 2020. Palm oil is the feedstock for biodiesel. For blending ethanol in gasoline, depending on the user, the targets are 1 or 2 percent in 2015, 2 or 5 percent in 2016, 5 or 10 percent in 2020, and 20 percent in 2025. Because biofuels are not competitive with petroleum products much (if not most) of the time (see figure 2 in Kojima 2013a), the Government of Indonesia has agreed to pay unit price subsidies. The parliament in 2015 approved subsidies of up to Rp 4,000 (US\$0.30) per liter of biodiesel and Rp 3,000 (US\$0.23) per liter of ethanol (OFI 2015), both of which are high by any standards. Presidential decree 61/2015 issued in May 2015 set up a palm oil

fund—financed by a levy on palm oil exports, “public funds,” and other “legitimate” sources. The fund will be used to pay for the biodiesel unit subsidy, which is the difference between the benchmark procurement cost of biodiesel and the regulated price of diesel.

Islamic Republic of Iran

The Iranian government’s passage of the Targeted Subsidies Reform Act in 2010 was a bold move. The Act aimed to raise the prices of fuels, water, bread, rice, cooking oil, milk, sugar, postal services, and airfare to close to cost-reflective or international levels in five years. In exchange, half of the subsidy savings would be used to provide cash transfers to the affected households, 30 percent to provide grants to agricultural and industrial enterprises, and 20 percent to cover administrative costs. With respect to fuels, the Act called for gradually increasing fuel prices to no less than 90 percent of the Persian Gulf FOB prices between 2010 and 2015, and similarly increasing natural gas tariffs to 75 percent of export-parity prices and power tariffs to cost-recovery levels. The Reform Act established the Targeted Subsidies Organization to oversee the implementation of the reform measures.

The Act was passed by the parliament in January 2010 to go into effect in March 2010, but several concerns delayed the start of its implementation: (1) high inflation from price increases, (2) conversion of the local currency to gold and foreign currencies in response to high domestic inflation by those fearing currency depreciation, (3) adverse effects on the Tehran Stock Exchange, (4) widespread bankruptcies of energy-intensive firms, and (5) public opposition and protests. Seven months later on October 15, 2010, the president announced the start of the subsidy reform and informed the public that Rls 810,000 (US\$80) would be deposited in the bank accounts of all registered individuals in the first two months, which could be withdrawn only after the price increases. To prevent hoarding and manage inflationary expectations, the date of price increases was not announced.

With no prior notice, and after securing 800 main checkpoints and major sites, the president announced the start of the reform program in a 10 pm television address on December 18, 2010. The address did not spell out the goods affected or the size of price increases, but conveyed the government’s decision to pay an additional Rls 10,000 (US\$1) a month to each individual to offset the bread price increase, allow withdrawals of cash transfers previously made, and eventually double the monthly payments. In so doing, the government abandoned the original plan to target cash transfers to households based on income, size, and the place of residence, and to limit the number of eligible recipients per family, despite the government’s possessing millions of financial questionnaires completed by respondents. Instead, the government decided to give uniform cash transfers to all individuals. By mid-November 2010, 62.5 million out of the total population of 75 million had reportedly received cash transfers. Eventually 72.5 million are reported to have registered for cash transfers.

Oil price increases were announced on the next day. With the exception of government vehicles and those used mostly in agriculture and industry running on regular gasoline, the price increases were at least double and as high as 21-fold. There was no official explanation for how these increases had been arrived at. On the same day, the state radio and television stations steadfastly reported widespread and enthusiastic public acceptance of the subsidy reform program implementation. There were no mass protests. A poll conducted by the parliament’s research center in March 2011 showed that some 42

percent of respondents regarded the implementation of the subsidy reform as “good” or “very good,” against 22 percent who considered implementation “bad” or “very bad” (Amuzegar 2011).

Over time, these large price increases were accompanied by a downturn in the economy due to intensifying sanctions, sharp depreciation of the local currency, and high inflation. These factors invited much criticism from the parliament, which in 2012 amended the Reform Act and changed “no less than 90 percent” of FOB prices to “no more than 90 percent,” thereby turning price floors to price ceilings and entrenching price subsidies. The parliament also increased the allocation to cash transfers to families from 50 percent to 80 percent (Hassanzadeh 2012). The parliament rejected the proposal to increase prices in 2012, and depreciating currency meant that domestic prices were declining in real terms. The second round of price increases did not take place until April 2014. As a result, the savings from subsidy reform did not materialize nearly to the extent initially envisaged in 2010—world oil prices rose after December 2010 but retail prices were frozen, the local currency continued to fall sharply, and yet the near-universal cash transfers continued—and the Targeted Subsidies Organization developed a large deficit, growing to as much as 1–2 percent of GDP (IMF 2014b).

Subsequent developments notwithstanding, it is significant that price increases as large and far-reaching as the ones effected in December 2010 were not rolled back under political pressure. Although it is difficult to pinpoint the causes, the near-universal, large cash transfers undoubtedly helped. Several other government actions—not all of which represent “good” practice—arguably also contributed. On December 18 and 19, 2010, all major filling stations, shopping malls, and the entire Tehran bazaar were closely watched by security forces, riot police, and special guards. Some 10,000 inspectors worked on three shifts a day to monitor and prevent accompanying retail price increases and mass protests. Media organizations, shops, and businesses were reportedly ordered not to criticize the program. Transportation workers were told that if they stopped work, their union membership cards would be cancelled or they would be fined. Shopkeepers were warned that they would be arrested and punished for price gouging. Government planners had reportedly placed some 35 key products on a watch list, and large stockpiles of essential items had been kept in storage facilities in order to prevent spot shortages and private speculation (Amuzegar 2011).

The fuel price increases in the second phase of the subsidy reform were not as large as in the first phase. Because of currency depreciation, despite the significant increases, the prices in U.S. dollars actually declined from December 2010 to April 2014. The prices of kerosene, furnace oil, and LPG for household use are especially low (Table 15). Because of continuing currency depreciation, the prices in U.S. dollars have fallen further since April 2014. The budget for the fiscal year ending in March 2016 approved an increase of 5 percent for petroleum product prices.

In August 2014, the governor of a province bordering Iraq was reported as having announced that the provincial government was raising the price of gasoline from Rsl 24,000 (US\$0.92) per liter to Rsl 35,000 (US\$1.34) to prevent out-smuggling (*Platts Commodity News* 2014b).

Table 15: New fuel prices in the Islamic Republic of Iran in phases 1 and 2 of subsidy reform

Fuel	unit	Dec 2010		Apr 2014	
		Rls/unit	US\$/unit	Rls/unit	US\$/unit
Regular gasoline within quota ^a	liter	4,000	0.39	7,000	0.28
Regular gasoline outside quota	liter	7,000	0.67	10,000	0.40
Super gasoline within quota ^a	liter	5,000	0.48	8,000	0.32
Super gasoline outside quota	liter	8,000	0.77	11,000	0.44
Diesel within quota	liter	1,500	0.14	2,500	0.10
Diesel outside quota	liter	3,500	0.34	5,000	0.20
Residential kerosene	liter	1,000	0.10	1,500	0.06
Residential furnace oil	liter	2,000	0.19	2,500	0.10
Residential LPG sold in 11-kg or smaller cylinders	kg	1,000	0.10	2,100	0.08
Residential LPG sold in larger cylinders ^b	kg	5,000	0.48	6,500	0.26
Natural gas for electricity generation ^c	mcf	22,653	2.18	22,653	0.91

Sources: *Platts Commodity News* 2014a, *Trend* 2014.

a. The quota for private car owners is 60 liters per month. In February 2015, the quota for inter-city taxis was decreased from 900 to 750 liters per month, and for taxis capable of running on both gasoline and natural gas from 600 to 500 liters. The quotas for city taxis are 500 liters for gasoline-only and 300 liters for bifuel.

b. The price of LPG sold in larger cylinders was raised to Rls 6,000/kg in July 2013.

c. The price of natural gas for the power sector has remained at Rsl 800/cubic meter.

Jordan

After several false starts, the Government of Jordan discontinued fuel subsidies and began adjusting fuel prices monthly at the end of 2012, with the exception of LPG. To that end, in November 2012, the government raised the price of LPG sold in 12.5-kg cylinders by 54 percent, kerosene and diesel by 33 percent, and regular gasoline (90 RON) by 14 percent (<http://www.jopetrol.jo/>). Although the price increase was the largest for LPG, the new retail price was still below cost recovery. Jordan's currency is fixed at 0.709 dinar to the dollar, obviating the need to adjust fuel prices for currency fluctuations.

To help households cope with price deregulation, the government introduced a cash transfer program covering 70 percent of households. Cash is transferred to households earning less than JD 10,000 (US\$14,000) a year at a rate of JD 70 (US\$100) per person up to six members per household annually, provided that the oil price is above US\$100 a barrel. To sharpen targeting, the government later tightened the eligibility criteria by adopting proxy means testing that took into account not only wage income but also consumption and asset indicators. In 2014, the government specified asset thresholds for cars, land, and real estate ownership. The government further developed the national unified registry database in the Income and Sales Tax Department to link it to other databases and rank families according to proxy-means test scores (IMF 2014e).

The price of LPG sold in 12.5-kg cylinders, intended for household use, had been fixed for years at JD 6.5 per cylinder, or US\$733 per tonne (US\$0.73 per kg), and then raised and fixed at JD 10 per cylinder (US\$1,128 per tonne) between November 2012 and December 2014. During the same period, Saudi Aramco's contract price for LPG rose above US\$1,000 per tonne on several occasions, and exceeded the

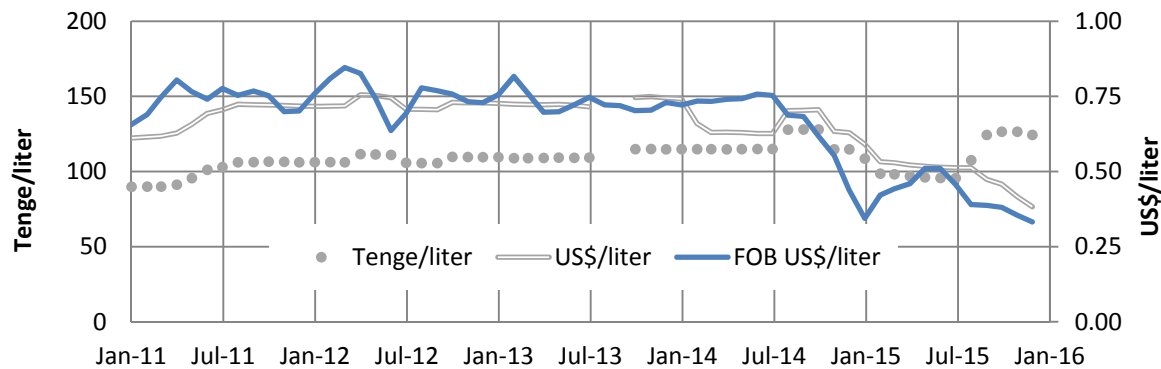
price of LPG in 12.5-kg cylinders in December 2013. Because bottling, storing, transporting, and selling LPG in 12.5-kg cylinders adds considerably to the cost, market-based prices of LPG would have been much higher. In 2015, LPG prices were lowered six times during the first eleven months as world LPG prices fell sharply. In December 2015, LPG prices were raised for the first time since November 2012. LPG sold in 12.5-kg cylinders is cross-subsidized. Because of economies of scale, its unit price should be higher than that of bulk LPG or LPG sold in 50-kg cylinders, but it has been the lowest of the three.

There are several indications of good practice in pricing policy in Jordan. Prices have been regularly adjusted every month since 2012, and have closely tracked FOB prices in the Arab Gulf. Even small price movements have generally been transmitted, thereby helping consumers get accustomed to the notion that petroleum product prices move up and down, just as the prices of all other goods. Kerosene and diesel prices are set equal, eliminating any financial incentive to adulterate diesel with kerosene.

Disruptions to supplies of natural gas from Egypt have forced the National Electric Power Company to turn to diesel and fuel oil—which are far more expensive than natural gas—for power generation. In 2014, the amount of Egyptian gas imports was less than one-third of what had been programmed, and was expected to be half of the programmed amount in 2015. The operating losses suffered by the National Electric Power Company due to tariff subsidies, which have grown rapidly, was an estimated 4.6 percent of GDP in 2013 and 4.5 percent in 2014 (IMF 2014j). In January 2015, tariffs were increased by 15 percent, but the increases were halved following strong pressure from the parliament, prompted by the sharp drop in the world oil price. The government has stated its commitment to return to the January 2015 tariff levels should the price of Brent crude exceed US\$70 a barrel for two or more months, and expects the utility to achieve cost recovery by 2018. Thanks to low oil prices, the utility's operational losses are estimated to fall by 3 percentage points to 1.4 percent of GDP in 2015 (IMF 2015g, 2015j).

Kazakhstan

The policy of the Government of Kazakhstan for refined products is to stabilize them as much as possible by setting ceilings on retail prices. Figure 17 provides an illustration of the pricing policy by comparing the national monthly average prices of 92 RON gasoline—the most commonly used grade in the country, the price of which was controlled by the government until September 2015—with FOB prices of the same gasoline grade in Singapore. There is substantial smoothing of prices in local currency, and when converted to U.S. dollars, the retail prices were often about the same as, or even below, the FOB prices. Figure 17 gives strong indications of price subsidies, because adding transportation, storage, and distribution costs should make retail prices substantially higher than FOB prices. In addition, diesel fuel used in agriculture is further subsidized. For example, in March 2014, the agriculture minister announced that the price of diesel for farmers would be set at 95 tenge (US\$0.52) per liter during the spring sowing campaign (Central Asia News 2014)—for which the government annually allocates hundreds of millions of dollars—against 115 tenge (US\$0.63) per liter paid by other consumers of diesel during the same season.

Figure 17: Comparison of 92 RON gasoline retail price in Kazakhstan with FOB price

Source: <http://stat.gov.kz> for Kazakhstan retail prices, industry sources for FOB Singapore.

Note: National average of surveyed prices for gasoline with 92 RON in Kazakhstan and 92 RON gasoline FOB prices in Singapore.

For the purpose of ensuring adequate supplies and maintaining stable and relatively low domestic prices, the government has introduced what began as a seasonal ban on exports of petroleum products during the sowing and harvesting seasons. In practice, the “temporary” ban, typically lasting six months, has been renewed repeatedly, resulting in a continuous ban on diesel and other fuel exports since May 2010. The most recent ban was for kerosene, diesel fuel, and other petroleum products outside the Eurasian Economic Union from July 30, 2015 for six months. Exports of gasoline have also been banned during much of the time. While banning exports, the government has also imposed temporary bans on imports of petroleum products from Russia. The most recent ban, in effect from March 5 to April 20, 2015, was prompted by the collapse of the ruble, making Russian imports cheaper and thereby threatening the competitiveness of the domestic refineries (*Astana Times* 2015). Earlier, the import bans had more to do with Russian imports being too expensive to enable cost recovery.

The government’s pricing and cross-border trade policies have often led to regional fuel shortages. In the summer of 2014, for example, gasoline shortages persisted, in part because the ceilings on retail prices did not allow cost recovery, leading to large losses suffered by fuel suppliers. In August, the government raised the price of 92 RON gasoline by about 11 percent, but the gasoline shortages persisted well into September, while the First Deputy Minister of Energy in a press conference reiterated the government’s commitment to subsidizing petroleum products (Godwin Advisory 2014).

In September 2015, the National Bank of Kazakhstan moved to a floating exchange rate regime. Citing greater price volatility of Russian petroleum product imports as a result, the government deregulated the prices of 92 and 93 RON gasoline, while continuing to set maximum prices for 80 RON gasoline and diesel.

Malawi

In June 2012, against the backdrop of supply shortfalls and growing price gaps, the Malawi Energy Regulatory Authority (MERA) resumed implementation of an automatic fuel pricing mechanism, last abandoned in 2004. The mechanism sets price ceilings and calls for price adjustment if landed costs in local currency vary by more than 5 percent. For changes smaller than 5 percent, a price stabilization

fund is used to compensate importers for losses as necessary. An energy pricing committee meets at the beginning of each month to review price and currency movements, but the committee may hold an emergency meeting between scheduled meetings in the event of sharp currency depreciation.

MERA has been posting announcements about changes in costs and the reasons for price adjustments on its website, but not every month. The 5-percent rule has not always been followed. For example, after decreasing retail prices for two consecutive months in January and February 2015, in its March 2015 announcement, MERA noted that the landed prices of gasoline, kerosene, and diesel had all risen by more than 5 percent but that the prices would be maintained the same through “rationalization” of the levies on the fuels (MERA 2015b). Despite one more announcement about rising costs of imported fuels, MERA did not increase prices until May 7, 2015, following which MERA did not change fuel prices until December 2015. Although no announcement is posted for August 2015 on MERA’s website, a news article reported MERA’s chair as stating in early August that the landed price of gasoline in local currency had increased by 14.46 percent since the “last review” of May 2015, but that MERA had decided to shield consumers and not raise the ceiling on the price of gasoline (*Ablaze* 2015).

From September to December 2015, MERA stated on its website that the threshold of 5 percent had been exceeded for one or more petroleum products, but the government had decided to “cushion” consumers from the adverse effects of price increases. Noting that the currency had depreciated by 36 percent since the last price adjustment of May 2015, MERA stated in its December 2015 press release that the landed costs of gasoline, diesel, and kerosene had increased by 6.74, 11.57, and 10.66 percent, respectively. Nevertheless, by means of “adjustment” to the fuel stabilization fund levy, MERA lowered the price ceilings for these fuels. Overall, in 2015, the ceilings on the prices of the three fuels were decreased three times (January, February, and December), and increased once (May). The ceiling on the price of LPG was lowered four times and raised twice.

Malaysia

Malaysia exercises administrative control of gasoline, diesel, and LPG prices. The government removed the subsidy for 97 RON gasoline in July 2010, while maintaining subsidies for 95 RON gasoline, diesel, and LPG. The subsidized prices of 95 RON gasoline, diesel, and LPG were raised once each in 2010 and 2011: in July 2010 the prices of gasoline and diesel were raised by RM 0.05 (US\$0.016) per liter and LPG by RM 0.10 (US\$0.032) per kg, and in January 2011 all prices were raised by RM 0.05 per respective unit. The price of LPG has not been changed since January 2011 and remains at RM 1.90 (US\$0.52) per kg. Gasoline and diesel prices were raised by RM 0.20 (US\$0.06) per liter in September 2013 and in October 2014, by RM 0.25 (US\$0.08) per liter in March 2014, and by RM 0.10 (US\$0.025) per liter in June and October 2015. Prices were also lowered in other months, for a total of six times for 95 RON gasoline and three times for diesel between December 2014 and the end of 2015.

The government abolished subsidies for 95 RIN gasoline and diesel in December 2014 and moved their prices to a managed float mechanism, whereby costs from the previous month would be used as reference prices to set the fuel prices every month. Fuel subsidies for public transport, fishing vessels, and LPG have been left unchanged. Weakening ringgit has meant a falling unit price for LPG (Table 16). The 2015 budget exempts several energy items—95 RON gasoline, diesel, LPG, and monthly electricity consumption below 300 kWh—from the new 6-percent goods and services tax, which came into effect

on April 1, 2015 and is now levied on 97 RON gasoline. However, the price of 97 RON gasoline was not increased in April. In December 2015, the deputy finance minister reported that moving to the managed float system was expected to save RM 11 billion (US\$2.8 billion) in 2015 (*Bernama Daily* 2015).

Table 16: Evolution of fuel retail prices in Malaysia

Date	97 RON RM/liter	95 RON RM/liter	Diesel RM/liter	LPG RM/kg	97 RON \$/liter	95 RON \$/liter	Diesel \$/liter	LPG \$/kg
Sep 9, 2014	2.75	2.10	2.00	1.90	0.86	0.66	0.63	0.60
Oct 2, 2014	2.75	2.30	2.20	1.90	0.85	0.71	0.68	0.58
Nov 19, 2014	2.55	2.30	2.20	1.90	0.76	0.68	0.65	0.57
Dec 1, 2014	2.46	2.26	2.23	1.90	0.72	0.66	0.65	0.55
Jan 1, 2015	2.11	1.91	1.93	1.90	0.60	0.55	0.55	0.54
Feb 1, 2015	2.00	1.70	1.70	1.90	0.55	0.47	0.47	0.52
Mar 1, 2015	2.25	1.95	1.95	1.90	0.62	0.54	0.54	0.53
Apr 1, 2015	2.25	1.95	1.95	1.90	0.61	0.53	0.53	0.51
May 1, 2015	2.25	1.95	1.95	1.90	0.63	0.55	0.55	0.53
Jun 1, 2015	2.35	2.05	2.05	1.90	0.64	0.56	0.56	0.52
Jul 1, 2015	2.55	2.15	2.05	1.90	0.68	0.57	0.55	0.51
Aug 1, 2015	2.45	2.05	1.95	1.90	0.64	0.54	0.51	0.50
Sep 1, 2015	2.35	1.95	1.80	1.90	0.54	0.45	0.42	0.44
Oct 1, 2015	2.45	2.05	1.95	1.90	0.58	0.48	0.45	0.45
Nov 1, 2015	2.45	2.05	1.90	1.90	0.57	0.48	0.44	0.44
Dec 1, 2015	2.45	1.95	1.90	1.90	0.57	0.46	0.44	0.44

Source: Government announcements.

The Government of Malaysia has openly and repeatedly acknowledged abuses at every level of the supply chain in the form of diversion of low-price fuels for illegal uses. In particular, out-smuggling of fuels has been exacerbated by additional price subsidies provided to fishing vessels, which are ideally suited for smuggling. In August 2012, the government announced that a representative of the Malaysian Fisheries Development Authority would in the future verify each catch landed, and those with insufficient catch would no longer be permitted to buy lower-priced fuel (*Borneo Post* 2012).

While smart cards have been used in an attempt to control sales of subsidized fuels to public transport operators and fisheries, the government has admitted their ineffectiveness. In June 2014, for example, the Public Accounts Committee (PAC) pointed out in a press conference that the fleet card for diesel (intended for public transport operators) could be used by anyone to buy an unlimited supply of diesel (*Bernama Daily* 2014).

In May 2014, the government launched “Ops Titik,” designed to stem illegal diversion of subsidized diesel. In announcing Ops Titik, the Domestic Trade, Cooperatives and Consumerism Minister said that the operation would be conducted jointly with the police, Customs Department, the Malaysian Maritime Enforcement Agency, the Malaysian Anti-Corruption Commission, and local councils. The government reports that between May 15 and December 22, 2014, Ops Titik identified 516 cases of abuse and seized subsidized diesel, recovering RM 24,364,814 (US\$7.5 million) (<http://www.kpdnkk.gov.my/kpdnkkv3/>

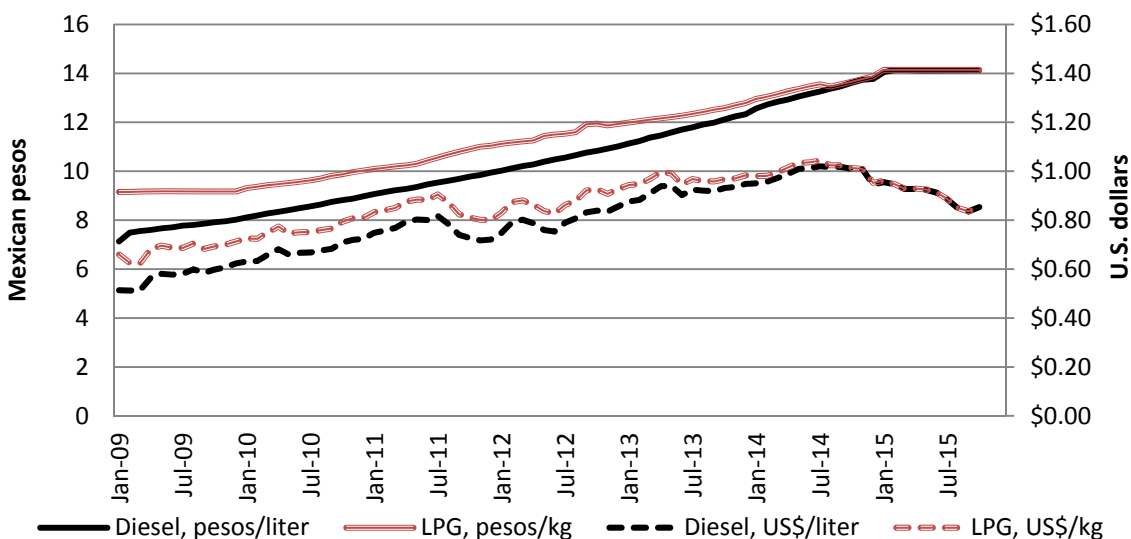
images/KPDNKK/ops-titik/ops_titik_BI_-_22.12.2014.JPG). Although fuel prices are no longer subsidized, there are still large price differences with Thailand and other neighboring countries, largely due to the absence of fuel taxation and other levies in Malaysia other than the 6-percent goods and services tax on 97 RON gasoline. As such, financial incentives for out-smuggling continue.

Mexico

The government uses a special tax on production and services to smooth domestic prices of gasoline and diesel, while controlling maximum retail prices of LPG through a series of decrees. Until the recent oil price collapse, gasoline and diesel prices rose at a fairly stable rate, averaging 0.2–0.4 percent a month in 2008 and rising to about 1 percent a month by 2011 and remaining at that rate through 2013. LPG prices were frozen in 2009, and then raised at a small rate until January 2015, after which it has remained the same in nominal terms (Figure 18). The prices of these fuels were effectively decoupled from international prices and exchange rate fluctuations. Thanks to the fall in world petroleum product prices, fuel price subsidies were largely eliminated by early 2015.

The special tax on production and services was negative most of the time between January 2009 and August to November 2014, depending on the fuel (Figure 19). Somewhat surprisingly, premium gasoline has historically been subsidized much more than regular gasoline or diesel, with the subsidy provided by the special tax for premium gasoline being more than double that for regular gasoline in 44 months during the period shown in the figure. The difference in favor of premium gasoline became large in 2013 and 2014, rising to a nine-fold difference in September and October in 2014, followed by the tax having the opposite sign in November 2014—premium gasoline continued to be subsidized while regular gasoline was levied a positive special tax—and again in July and August 2015. Otherwise, in 2015, following the large drop in the world oil price, the government sharply increased the tax by not decreasing retail prices. Between January 2010 and August 2015, the price of regular gasoline was decreased only once, in December 2014 by 0.5 percent. During the same period, the price of premium

Figure 18: Retail prices of diesel and LPG in Mexico

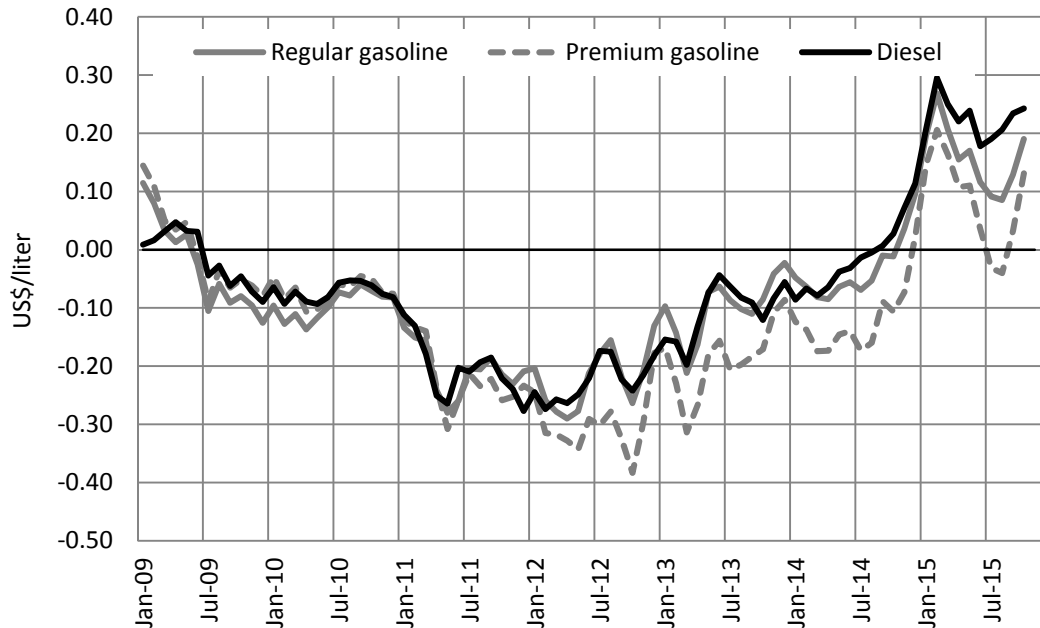


Source: <http://sie.energia.gob.mx/>.

Note: LPG price is for Mexico City.

gasoline was decreased twice, by a mere 0.2 percent in December 2014 and 0.06 percent in February 2015, while the price of diesel was decreased five times but by no more than 0.085 percent at any given time.

Figure 19: Special tax on production and service on gasoline and diesel fuel in Mexico



Source: World Bank staff calculations based on data from <http://sie.energia.gob.mx/>.

LPG prices were deregulated until March 2001, when the Ministry of Economy began to set ceilings on end-user prices and the Energy Regulatory Commission began to regulate producer prices. In 2005, the energy regulator set regular monthly increases of between 0.75 and 1.75 percent. The average end-user prices were increased by 0.33 percent a month in 2006 and 2007, and by 0.032 pesos per kg (US\$3 per tonne) a month in 2008. In 2009, the government had hoped to make a one-time price adjustment and then freeze the prices for a year, and fixed the weighted average national retail price of LPG before VAT at 8.03 pesos (US\$0.59) per kg. In 2010, the pricing policy returned to increasing end-user prices by 0.05 pesos (US\$0.004) per kg a month before VAT. In July 2011, the increase was set at 0.02 pesos (less than US\$0.02) per kg per month, although the actual increases were larger (SENER 2012). The practice of steadily increasing prices broadly continued until January 2015, when price adjustment stopped.

The Hydrocarbons Law of August 2014 introduced significant reform measures for both upstream and downstream sectors. In the downstream, the law opens up imports, refining, and sale of petroleum products—activities that are currently confined to the national oil company, Pemex—to other participants over time to no later than January 1, 2017. The maximum retail prices of gasoline and diesel will be established by an executive decree between 2015 and 2017. Starting on January 1, 2018, the retail prices will be set by market conditions. In the light of continuing low world prices, the finance ministry in September 2015 proposed that the pricing policy move to market-based pricing two years earlier in 2016. The Hydrocarbons Law similarly stipulates that LPG prices will be deregulated by January 1, 2017, or earlier, subject to a support program for LPG consumers having been established.

Domestic natural gas prices are linked to Henry Hub prices, which have been very low in recent years. Since January 2005, the monthly price averaged over all end-users ranged from US\$2.38 per mcf in April 2012 to US\$12.32 per mcf in July 2008. Power tariffs are not cost-reflective, with agriculture being charged the least and commercial consumers charged the most. The ratio of average tariffs for commercial consumers to those for agriculture has been about five in recent months (<http://sie.energia.gob.mx/>).

Morocco

With the exception of LPG, petroleum product prices were indexed to international prices in the 1990s. The government suspended price indexation in 2000 when world oil prices—which were about US\$10 a barrel at the beginning of 1999—rose to as high as US\$30 a barrel by the middle of the year. Between 2000 and 2014, retail prices of gasoline, diesel, fuel oil, and LPG were fixed and subsidized by the budget through a compensation fund. Fuel oil and LPG were subsidized much more than gasoline and diesel. For example, at the end of 2011, gasoline carried no net-of-tax subsidies and diesel had a net-of-tax subsidy of only 4 percent, while fuel oil and LPG had net-of-tax subsidies of about one-third and two-thirds, respectively (IMF 2013a).

Food and fuel subsidies reached 6.6 percent of GDP in 2012. In that year, the government established three technical commissions that included government and civil society representatives to evaluate the macroeconomic effects of possible subsidy reforms, propose revised price structures for subsidized goods, and develop alternative social protection schemes. In June 2012, retail prices of gasoline, diesel, and fuel oil were raised by 27, 14, and 20 percent, respectively, delivering an estimated budget savings equivalent to 0.7 percent of GDP. In August 2013, the government began implementing a partial fuel price indexation mechanism linked to world prices. Indexation was based on a rolling moving average of the previous two months and provided for automatic adjustment of domestic prices when the difference between the market reference price and the domestic retail price exceeded 2.5 percent.

In February 2014, the government removed subsidies for gasoline and industrial fuel oil—the fuel oil subsidy for power generation was terminated four months later in June—and began quarterly price increases to reduce the unit-subsidy for diesel. Diesel prices were raised again in April and July, and price subsidies were eliminated at the end of 2014. In parallel, the government expanded existing targeted social protection programs (support to school-age children and medical assistance for the poor), introduced new social protection programs in support of low-income widows and the physically disabled, and provided support for the public transport to compensate for the cost of higher fuel prices and limit fare increases. When fuel oil subsidies for the power sector were ended in June 2014, the government introduced a contract with the public electricity company that included transfers in the next four years—amounting to about 0.5 percent of GDP in 2015 and 2016 and 0.1 percent of GDP in 2017—accompanied by tariff increases (IMF 2015c).

The Government of Morocco in December 2014 signed an agreement with petroleum product suppliers on petroleum product pricing. It provided for a transitional period between January and November 2015, during which prices would be announced by the government twice a month. Starting in December 2015, prices would be deregulated (*Maroc* 2014). The government implemented the policy exactly as agreed, and deregulated prices in December.

One exception to price deregulation is LPG. The retail price of LPG has been frozen since the 1990s. LPG use is widespread in Morocco, thanks to decades of government subsidies. The government has repeatedly assured the public that LPG will continue to be subsidized with no price increases envisaged. In recent years, annual subsidies have averaged DH 13 billion–14 billion (US\$1.5 billion–1.7 billion) (Morocco 2015). Diversion of subsidized LPG has been reported, including to agriculture for pumping water for irrigation.

Nepal

The Nepal Oil Corporation is a monopoly importer of all petroleum products in the country. There is only one supplier for this purpose, the Indian Oil Corporation. However, serious supply disruptions began to occur in September 2015, and in response the government signed a framework agreement with China in October 2015 to meet one-third of the country's petroleum product needs (*República* 2015b).

The government practiced ad-hoc fuel pricing until September 2014, when it adopted an automatic pricing mechanism for all petroleum products except LPG. The domestic prices are meant to be adjusted twice a month, when the Indian Oil Corporation announces new prices charged. However, in the light of the earthquake on April 25, 2015—the worst natural disaster in the country since the 1934 Nepal-Bihar earthquake—prices were not changed in May, June, and July. January was the only month in 2015 when prices were adjusted twice. Prices were adjusted once each in August and September 2015 (lowered in both months), and then remained the same for the rest of the year.

Between FY 2008/09 (ending on July 15) and FY 2014/15, the Nepal Oil Corporation incurred large losses because domestic prices were not sufficient to cover costs. While historically the diesel subsidy had the highest share of the total subsidy bill, more recently the LPG subsidy overtook the diesel subsidy. During the latter half of August 2014, for example, the firm reported that it was losing Nr 1.54 (US\$0.016) per liter of diesel and Nr 41.37 (US\$0.43) per kg of LPG, amounting to total losses of Nr 115 million (US\$1.2 million) and Nr 881 million (US\$9.1 million), respectively. In July 2014, the IMF reported that the corporation had a debt of Nr 34 billion (US\$350 million) (IMF 2014h). In FY 2014/15, the corporation reported a net profit of Nr 18 billion (US\$175 million), and the debt had been reduced to Nr 22 billion (US\$215 million). Although LPG continued to be subsidized, the subsidy amount fell dramatically by more than 90 percent in 2015, while all other fuels turned a profit. By August 2015 there was no subsidy even for LPG, although its price was lowered on August 2 (eKantipur 2015a; *República* 2015a). The LPG price was lowered again in September, but the profit margin increased.

When the LPG subsidy was growing alarmingly, the government proposed color-coding LPG cylinders to reserve subsidized LPG only for households. The government began distributing the red cards for households and blue cards for commercial users, with the first card being given to the Prime Minister by the Minister of Commerce in April 2012. However, the launch of the dual-pricing system has been repeatedly delayed and not started (eKantipur 2015b). Given the LPG subsidy is small or negative, it is unclear that it would make sense to introduce a dual-pricing scheme—which is certain to be vulnerable to abuse even with color coding and other measures.

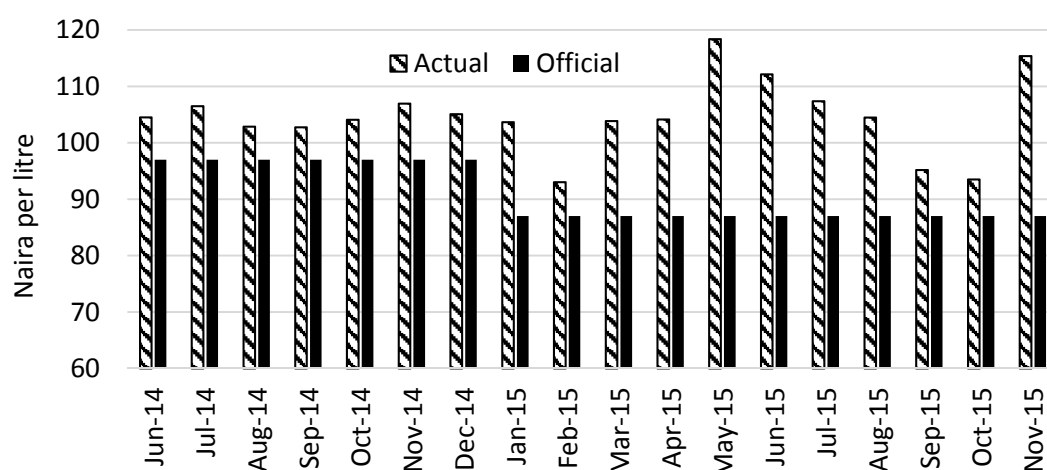
Nigeria

Nigeria provides universal price subsidies to two petroleum products: kerosene and, unusually, gasoline but not diesel fuel. In 2011, the subsidy bill reached 4.7 percent of GDP, with another 1 percent representing payment arrears to oil marketing companies paid out in 2012 (IMF 2013b). The fuel subsidies are estimated to have cost the government US\$35 billion between 2011 and 2014. They are large and unsustainable by any measure, and are highly regressive. They benefit the better-off disproportionately because it is much rarer for the poor to own motorized vehicles or backup power generators consuming gasoline than the rich, and kerosene is seldom found at the official price because of large-scale diversion. One analysis found that more than half of the gasoline subsidy is captured by the top 10 percent of the population. And while the subsidy bill falls with falling oil price, the government's oil revenue also falls, resulting in much less volatility in the subsidy share of the government oil revenue than one might expect (World Bank 2015c).

The subsidy for kerosene has had a checkered history. In June 2009, President Yar'Adua issued a directive abolishing the subsidy. The Petroleum Products Pricing Regulatory Agency, through which all subsidy payments are channeled, stopped granting subsidy payments for kerosene as a result, and the federal government did not allocate a budget for the kerosene subsidy in 2010. However, the Nigerian National Petroleum Corporation (NNPC), which is the national oil company of Nigeria, continued to provide subsidized kerosene, and in February 2015, President Jonathan officially announced that the kerosene subsidy had not been stopped. The legal case for continuing the kerosene subsidy is said to rest on the presidential directive not having been gazetted.

As a result of the NNPC's action, the price of kerosene for household use has been frozen nominally at ₦50 (US\$0.25) per liter, providing enormous financial incentives for commercial malpractice. It is rare to find kerosene on the market selling at the official price of ₦50 a liter. There have been rumors of five different channels for abusing the kerosene subsidy: (1) black markets, (2) diesel fuel adulteration, (3) diversion to the aviation fuel sector, (4) smuggling to neighboring countries, and (5) presenting it as having just been imported and claiming the subsidy reimbursement for the second time (*All Africa* 2011). A forensic audit into the affairs of the NNPC released in February 2015 reports that actual retail prices of kerosene were in the range ₦120–140 per liter (PwC 2015). The official price of gasoline is also not enforced, although the price differences are smaller than for kerosene. Payment arrears to oil marketers have historically caused fuel shortages, pushing up the actual prices paid. In December 2015, in the face of continuing gasoline shortages, the government agreed to pay ₦407 billion (US\$2.1 billion) of overdue reimbursement payments to oil marketers.

The National Bureau of Statistics began surveying the actual prices paid by households in June 2014, and makes the data available by state. The national average surveyed prices are shown against the official price in Figure 20. The results are indicative of varying degrees of gasoline shortages, with not a single state reporting the official price between April and August 2015, and again in November 2015, when the highest surveyed price was recorded—₦187.5 (US\$0.94) per liter, or more than double the official price and much higher than the price that would have prevailed in a deregulated market.

Figure 20: Administrative gasoline prices and average actual consumer prices

Source: <http://www.nigerianstat.gov.ng/nbslibrary/sector-statistics/sector-statistics>.

The government attempted to deregulate the price of gasoline in January 2012, more than doubling the retail price. Immediately after the price increase, trade unions staged an eight-day strike, estimated to have cost the economy more than US\$1 billion (Reuters 2012). The government backed down and lowered the gasoline price to ₦97 (US\$0.60) a liter within two weeks. The price remained at that level until January 2015, by which time the price denominated in U.S. dollars had declined to US\$0.52 per liter. Nevertheless, perhaps partly because of the presidential elections originally scheduled for February 2015 (later postponed to March), the government lowered the price of gasoline to ₦87 (US\$0.47) per liter in January. In dollar terms, the retail price has continued to decline because of currency depreciation. At the end of July 2015, the pricing agency estimated the unit fuel price subsidy to be ₦45 (US\$0.22) for gasoline and ₦63 (US\$0.32) for kerosene (pppra.gov.ng).

Subsidies are channeled through two different mechanisms. One involves direct budgetary transfers to those companies submitting approval for reimbursement, which is administered by the Petroleum Products Pricing Regulatory Agency. The second is through withholdings by the NNPC of oil revenue obtained through joint ventures with international oil companies, referred to as implicit subsidies in the IMF's country reports. The IMF's estimates of the two types of subsidies are given in Table 17. The very large subsidies paid out in 2011 became the subject of a series of government investigations.

Table 17: Fuel subsidies in Nigeria, percent of GDP

Subsidy type	2011	2012	2013	2014
Budgetary transfers	4.7	2.2	0.9	0.7
Implicit subsidies	1.5	1.1	0.9	0.7

Source: IMF 2013b, 2015e, 2015f.

Note: The budgetary transfer in 2012 includes payment arrears from 2011.

The audit reports on the oil and gas sector published by the Nigeria Extractive Industries Transparency Initiative, the most recent of which covers the year 2012, and the forensic audit into the affairs of the NNPC carried out by PwC for the Auditor General for the Federation covering the period January 2012 to July 2013, provide more details about the way the NNPC provides fuel subsidies. Unlike all other

marketers, who submit reimbursement applications to the Petroleum Products Pricing Regulatory Agency and then are reimbursed, the NNPC withholds the subsidy reimbursement amounts from the sale of the federal government's share of equity oil. By withholding the amounts corresponding to the kerosene subsidy, the NNPC had been able to offer a large price subsidy for kerosene even after all other government agencies considered the subsidy suspended following the June 2009 presidential directive. The 2012 audit by the Nigeria Extractive Industries Transparency Initiative points out that, unlike in the previous years, the NNPC in 2012 stopped direct deductions of subsidy claims and simply withheld large sums of money without providing explanations. The forensic audit found over-claims of US\$304 million for gasoline and kerosene subsidies during the audit period (NEITI 2015; PwC 2015).

To compensate the beneficiaries of the gasoline subsidy for the planned subsidy removal in January 2012, the government in 2011 developed a Subsidy Reinvestment and Empowerment Program (SURE-P) with three objectives: (1) mitigate the immediate impact of subsidy removal (which was partially reversed within two weeks as explained above), (2) accelerate economic transformation through investing in critical infrastructure, and (3) lay a foundation for a national safety net program. Social protection mechanisms included maternal and child health services, public works for women and youth, urban transport development, and vocational training. The full document for SURE-P was not issued until November 2011, less than two months before the subsidy removal. SURE-P was originally programed for 2012–2015. Among the interventions focused on strengthening social safety nets and protection, the program on maternal and child health and the graduate internship program—designed to increase the employability of unemployed graduates—have been particularly active (sure-p.gov.ng). The federal government's budget allocation for SURE-P was ₦274 billion (US\$1.7 billion) in 2013, ₦268 billion (US\$1.6 billion) in 2014, and ₦102.5 billion (US\$0.5 billion) in 2015 (budgetoffice.gov.ng).

The government has historically kept natural gas prices for the domestic market low, discouraging delivery of gas to the domestic market and promoting exports, re-injection, and flaring of associated gas. For many years, the regulated price of gas for the power sector was exceptionally low by any standards—the National Gas Pricing Policy issued in 2008 set US\$0.10 per mmBtu as the floor. The prices have been increased slowly over the years, the most recent increase of which was meant to be implemented in January 2015 at US\$2.50 per mmBtu. However, the implementation of the price increase from US\$1.50 to 2.50 per mmBtu has been delayed.

The effective price is even lower because of non-payment, caused in turn by non-payment in the power sector. About two-thirds of natural gas supplied to the domestic market is consumed in the power sector, making the creditworthiness of power producers critically important for the financial health of gas suppliers. The power sector in Nigeria is undergoing a major reform program, having completed unbundling of a state-owned company followed by privatization. There are now dozens of generation and distribution companies, all privately owned. The objective was to reach cost-reflective tariffs, but power tariff increases were delayed in 2015, influenced in part by the presidential elections in March.

The regulated gas tariffs are applicable only to gas supplied under the domestic supply obligation, mandated in the 2008 National Gas Pricing Policy. The domestic supply obligation requires all petroleum asset holders to dedicate a specific portion of their gas reserves and production for delivery to the domestic market as a condition for gas exports and the development of any other type of gas project. Failure to comply with the obligation would result in a penalty equivalent to the higher of the gas price

in the purchase agreement or US\$3.50 per mcf. For a variety of reasons, firms have not been fined for failing to meet the supply obligation.

Low gas and electricity prices are among the reasons for gas shortages on the domestic market. Generation capacity is stranded for lack of gas, reducing revenue due to lower power sales. The lower cash flows in the power sector, in part due to lack of gas, result in payment arrears to gas producers, perpetuating this vicious cycle. This has had adverse effects in neighboring countries reliant on gas from Nigeria transported in the West Africa Gas Pipeline for their own power generation. Inadequate gas supplies from Nigeria have meant having to generate power from much more expensive oil-based fuel, triggering mounting subsidies in the power sector in Ghana. This development in Ghana in turn has weakened the financial health of its power sector and made it less able to pay for Nigerian gas, thereby replicating the scenario in Nigeria.

In the upstream oil and gas sector, Pioneer Status provides large producer subsidies. It grants up to five years of tax exemption to domestic firms obtaining new licenses for oil and gas exploration and production. Pioneer Status has been granted even when the field so acquired has already been producing for years or even decades, signaling that there is little that is “pioneering” about the project and prompting the Nigeria Extractive Industries Transparency Initiative and others to question why such tax holidays have been approved.

Peru

A 2004 law deregulated prices, but the government in May 2004 set up Fondo de Estabilización de Precios de los Combustibles (FEPC, Fuel Price Stabilization Fund) for an initial period of 120 days when benchmark gasoline and diesel prices soared by about 35 percent and 50 percent, respectively, from their December 2003 levels. The fund initially covered gasoline, kerosene, diesel, LPG, and industrial fuel. The range for wholesale prices of each product would have an upper limit and a lower limit, and if the import-parity price was higher than the upper limit, the difference would be financed by the fund. Conversely, if the import-parity price was lower than the lower limit, the difference would be credited to the fund. For LPG, export-parity rather than import-parity prices apply. Emergency Decree No. 072–2010, issued in April 2010, limited the compensation and crediting to 10 percent of the values set by previous decrees for gasoline, diesel, kerosene, LPG, and industrial fuel used for certain purposes. Over the following two years, various petroleum products were dropped from FEPC while diesel and fuel oil used to generate electricity in isolated systems were added, leaving only bottled LPG, diesel, and the newly added fuel oil (www2.osinerg.gob.pe/preciosreferencia/TarPreciosBanda.html).

In the face of volatile and rising world oil prices, the government had to transfer a total of US\$2.4 billion to FEPC between 2005 and the end of 2011, after which budgetary transfers ceased. The fund’s debt in 2008 reached S/. 3,000 million (US\$1 billion), which was retired in 2009. After a large budgetary transfer to the fund, Emergency Decree No. 027-2010, issued in April 2010, required the regulatory agency to adjust price bands every two months and specified the band to be within ± 5 percent of the import-parity benchmark reference price, except LPG for which the variation would be 1.5 percent. The most recent decree, Emergency Decree No. 001-2015, specified the band to be equivalent to final consumer price variation of 15 percent for bottled LPG, 17 percent for diesel, and 19 percent for fuel oil used in power generation in isolated systems.

A 2012 law established Fondo de Inclusión Social Energético (FISE, Fund for Energy Social Inclusion), a component of which is to provide cash assistance to the poor for using LPG for cooking (www.fise.gob.pe). The fund is financed by surcharges on consumption of various forms of energy by other consumers. The eligibility criteria are stringent to ensure that better-off households do not benefit from the program. For example, electricity consumption in the previous 12 months cannot exceed a total of 360 kWh, or 30 kWh a month on average. The program provides S/. 16 (about US\$5) toward the purchase of LPG to refill a 10-kg cylinder every month from an authorized agent. A detailed evaluation is available from a report on the voluntary peer review of fossil fuel subsidy reforms carried out by the Asia-Pacific Economic Cooperation (APEC 2015).

South Africa

The government regulates gasoline, kerosene, and diesel prices. LPG prices have been regulated since July 2010. Once a month, the government announces “basic fuel prices” for gasoline, diesel, and kerosene; maximum LPG retail prices by location; maximum national retail price of illuminating kerosene; and maximum ex-refinery price of LPG. Basic fuel prices sum cost, insurance, and freight (CIF), 0.3% ocean losses, cargo dues, coastal storage, and stock financing (currently for 25 days). To the basic fuel price are added customs and excise, specific fuel tax, Road Accidents Fund levy (gasoline and diesel), slate levy (gasoline, diesel, and kerosene), petroleum pipeline levy (gasoline and diesel), illuminating kerosene dye levy (diesel; the price difference between kerosene and diesel was US\$0.14 per liter in May 2015), demand-side management levy (gasoline), inland transport recovery levy (gasoline and diesel), wholesale and retail margins, and transport costs. The slate levy settles under- or over-recoveries by oil companies arising from differences between the basic fuel prices, which remain the same for one month at a time, and daily fluctuations in world oil prices. The pricing formula allows for a total of three days of demurrage.

In the 2015 budget, the government announced that it would raise the fuel tax for general government revenue and the Road Accidents Fund levy to help pay for the deficit in the Fund (Table 18). These increases were estimated to raise 6.5 billion rands (US\$0.5 billion) and 9 billion rands (US\$0.75 billion), respectively, over the next two years.

Table 18: Fuel levy and Road Accidents Fund increases in the 2015 budget in South Africa

Levy	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel
	2014		2015		2014		2015	
	Rands per liter				US\$ per liter			
Fuel tax	2.25	2.10	2.55	2.40	0.19	0.17	0.21	0.20
Road Accidents Fund	1.04	1.04	1.54	1.54	0.09	0.09	0.13	0.13

Source: Government budget.

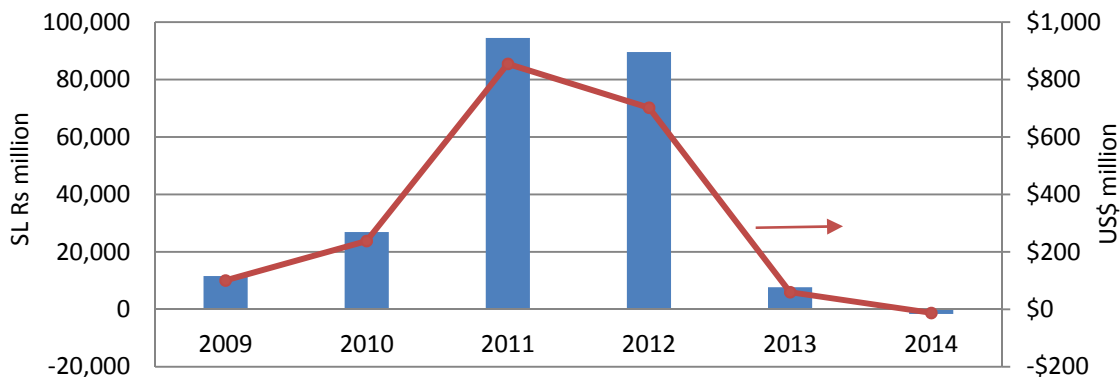
There are large subsidies in the power sector. Electricity in South Africa is generated mostly from coal, supplemented by nuclear, diesel, and wind (although wind accounts for only 0.1 percent of the total amount of electricity generated). The government has agreed to inject 23 billion rands (US\$1.7 billion) of equity to the monopoly state-owned utility, Eskom, and consider a debt write-down by converting part of the existing 60 billion rands (US\$4.5 billion) subordinated loan to equity (Eskom 2015). The South

African parliament in June 2015 passed the Eskom Special Appropriation Bill to address a shortfall in the fiscal year ending in March 2016 by injecting 23 billion rands in Eskom, to be raised from the sale of non-strategic state assets. In the same session, the parliament also passed the Eskom Subordinated Loan Special Appropriation Amendment Bill, which would strengthen Eskom's balance sheet by converting the 60-billion-rand loan granted in 2008 to equity.

Sri Lanka

The Government of Sri Lanka has been working to reduce and eventually eliminate energy subsidies for many years. Fuel and electricity tariffs are interlinked because of large fuel price subsidies historically given to electricity producers. The Ceylon Petroleum Corporation (CPC), which is state-owned and the country's sole refiner, suffered large losses in 2011 and 2012, and generated a small operating profit only in 2014 (Figure 21). More generally, fuel price and power tariff increases, combined with a doubling of hydropower generation, slashed the losses in the energy sector in 2013.

Figure 21: Annual losses of Ceylon Petroleum Corporation



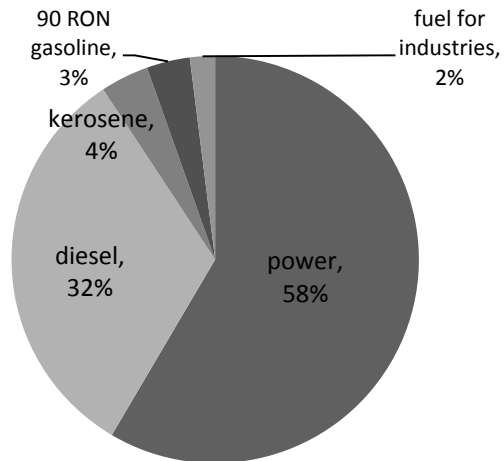
Sources: Annual reports of the CPC and the Department of Fiscal Policy, Ministry of Finance and Planning.
Note: The losses do not include additional expenses associated with the hedging transactions in 2007–2008.

Although annual losses were reduced substantially in 2013, the CPC's outstanding borrowings from state banks increased slightly from SL Rs 402.5 billion (US\$3.1 billion) in 2012 to SL Rs 419 billion (US\$3.2 billion) in 2013, and then declined to SL Rs 373 billion (US\$2.9 billion) by the end of 2014 (MFP 2014, 2015). These debts not only increased financing costs, but the high levels of borrowing by the CPC and its counterpart in the power sector to cover their losses have significantly affected the banking sector. These loans have hindered efficient allocation of resources to more productive investments and impeded capital formation, while having adverse effects on interest rates, employment, exchange rate, fiscal management, and inflation (CBSL 2014).

A prolonged drought in 2012 reduced hydropower generation capacity and increased demand for fuel oil, when international oil prices were high. Despite tariff increases in February 2012 and price subsidies for petroleum products provided by the CPC, the losses of the Ceylon Electricity Board (CEB) rose in 2012 sharply to SL Rs 61 billion (US\$490 million) from SL Rs 19 billion (US\$175 million) in 2011. Greater reliance on power generation using petroleum products increased the cost of supply to SL Rs 22.13 (US\$0.17) per kWh, while the average tariff was SL 15.65 per kWh (US\$0.12) (CBSL 2013). In that year, heavy fuel oil cost the CPC about SL Rs 100–110 (US\$0.78–0.86) per liter to supply, but the power sector

paid only SL Rs 65 (US\$0.51) (MFP 2013). The price subsidies for the power sector accounted for nearly three-fifths of the CPC's losses (rising from half in 2011), followed by subsidies for diesel fuel (Figure 22).

Figure 22: Breakdown of CPC's losses in 2012



Source: MFP 2013.

departments (MFP 2013, 2014, 2015).

The government issued a treasury bond in 2012 for SL Rs 60 billion (US\$470 million), of which SL Rs 50 billion (US\$390 million) was to cover outstanding payments owed by the CEB and the remaining SL Rs 10 billion (US\$78 million) for payments owed by other state agencies. Even so, the outstanding dues from various enterprises stood at SL Rs 102 billion (US\$800 million) at the end of 2012. The CPC recovered about 45 percent of its outstanding receivables in 2013 and 36 percent in 2014. In accordance with 2014 budget proposals, treasury bonds worth SL Rs 30.7 billion (US\$235 million) were issued in February 2014 to settle the outstanding debts owed by the CEB and several government

To reduce fuel price subsidies in the power sector, a fuel adjustment charge of 30 percent was levied beginning in March 2008. However, various exemptions have been granted since, eroding revenue from this source. The fuel adjustment charge was re-imposed on most consumer categories in February 2012. Petroleum product prices were raised in February 2013. Power tariffs were raised in April 2013, and the prices of fuel oil charged in the sector were raised to SL Rs 90 (US\$0.71) per liter for high-sulfur and SL Rs 100 (US\$0.79) per liter for low-sulfur fuel oil to reach cost recovery. However, following the commissioning of more coal-fired power generation units, power tariffs were lowered for certain consumer categories in September and November of 2014 by 15 percent and 25 percent, respectively, when a large reduction in hydropower generation during the first half of the year forced a greater reliance on more expensive thermal generation. As a result, the cost of electricity supply exceeded the average tariff by SL Rs 1.90 (US\$0.015) per kWh, turning the CEB's operating profit of SL Rs 23 billion (US\$180 million) in 2013 into a loss of SL Rs 13 billion (US\$100 million) in 2014 (CBSL 2009–2015; MFP 2013, 2015).

Another departure from the policy of cost-reflective prices is the pricing policy toward kerosene. An indication of whether and how much kerosene is underpriced (or undertaxed) is the price difference between kerosene and diesel, because on the world market their prices are essentially the same. In Sri Lanka, the price difference between diesel and kerosene was almost eliminated from June 1993 to March 1994, but has reappeared. The difference stayed less than SL Rs 10 (US\$0.10) per liter until 2004, when it rose to SL Rs 19.5 (US\$0.19) per liter between June 2005 and June 2006. The difference fell to SL Rs 9 (US\$0.07) per liter in 2012, but grew to SL Rs 36 (US\$0.26) per liter in 2015. A clear indication of underpricing is the difference between kerosene for household use and kerosene for industrial users, never more than SL Rs 10 per liter until September 2014, when it widened to SL Rs 29 (US\$0.22) per liter

and has remained at that level since. Such a large difference for the same fuel provides strong financial incentives for economic distortions, including commercial malpractice.

In January 2015, the government lowered petroleum product prices by 14–22 percent, and did not change prices for the rest of the year despite rising world prices in the subsequent months. The CPC and Lanka Indian Oil Corporation, the two suppliers in the country, reported that the price reduction had led to under-recoveries, resulting in large financial losses. The government has been working on a new pricing formula, which is designed to achieve cost recovery, but its approval and implementation have been delayed (*Nation* 2015a). In December 2015, the Minister of Petroleum Resources Development confirmed to the parliament that a new pricing formula would be introduced in the first quarter of 2016 (*Daily FT* 2015).

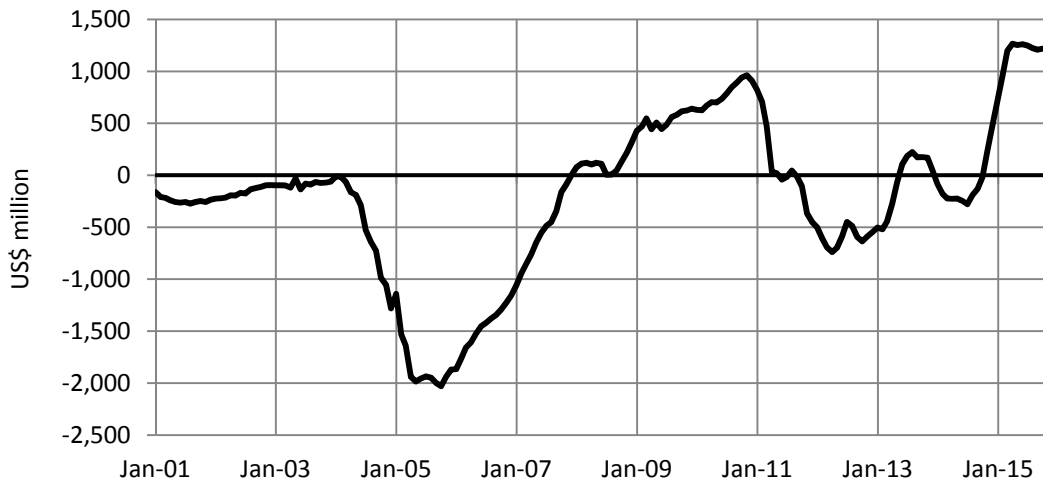
Thailand

The Government of Thailand has controlled fuel prices and subsidized them using several means in recent years:

- Oil Fund
- Tax adjustments
- Freezing the price of LPG at ex-gas separation plant
- Financial losses suffered by the state-owned energy firm, PTT, to subsidize CNG for automotive use.

The government has used an Oil Fund, first established in 1973, to dampen end-user price volatility as well as cross-subsidize certain fuels. In the past, the Oil Fund was used to subsidize LPG (over and above the subsidy provided at ex-plant, as described below). More recently, the Oil Fund has been used to cross-subsidize ethanol/gasoline blends, particularly E85 (blend containing 85 percent ethanol). As an indication of its magnitude, the subsidy provided by the Oil Fund for E85 was US\$0.30 per liter of ethanol in December 2015. Diesel fuel has been subsidized on and off by the Oil Fund, having been last subsidized between December 2013 and March 2014. In November 2015, the fund began subsidizing LPG. The fund is meant to be self-financing using cross-subsidization, but has run up deficits amounting to as much as US\$2 billion (Figure 23).

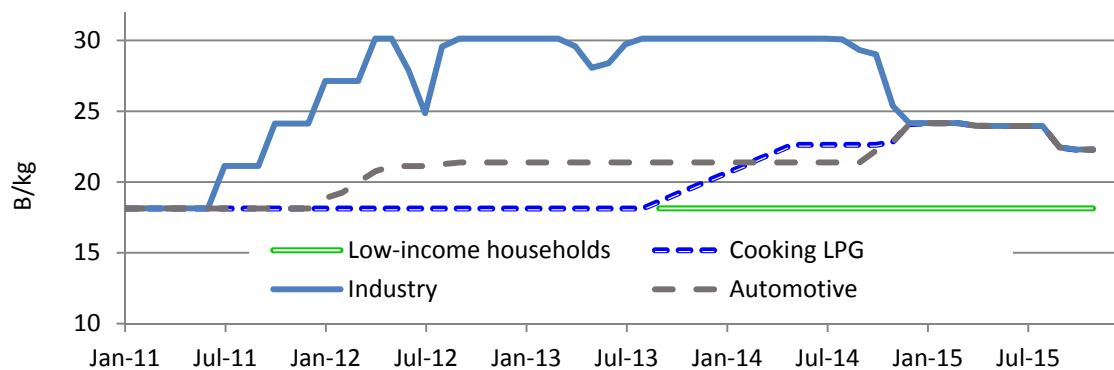
A 7-percent VAT has been consistently applied to all fuels. The government, however, adjusts the excise tax to influence prices. The government in recent years has set the goal of limiting the price of diesel to B 30 (US\$0.92) per liter, meeting this target by the combined use of the Oil Fund and a large excise tax reduction. In the run-up to the general elections in July 2011, the Thai cabinet in April approved a cut in the diesel excise tax from B 5.31 (US\$0.18) per liter to B 0.005 (US\$0.0002) per liter. The cut was originally meant to be in effect from April 21 until September 30 and was widely criticized for being political even by the Federation of Thai Industries. Although intended as a temporary measure, this excise tax reduction remained in effect until August 2014, nearly three years after the original end date. The highest excise tax and Oil Fund levy are charged to RON 95 gasoline without blended ethanol (RON 91 gasoline without blended ethanol was withdrawn from the market in March 2013).

Figure 23: Oil fund balance in Thailand

Source: World Bank staff calculations based on data at http://www.eppo.go.th/info/8prices_stat.htm.

There are three sources of LPG in Thailand: imports, refineries, and gas separation plants. Until February 2015, the price of LPG at the gate of gas separation plants was set at US\$333 per tonne. During this period of price freeze, Saudi Aramco contract prices for LPG rose to as high as about US\$1,200 per tonne in March 2012 and December 2013.

In July 2011, in preparation for ending the policy of fixing the ex-plant price of LPG at US\$333 per tonne and removing the subsidy, the government moved to a two-tier pricing system for LPG: low price for households and higher price for industrial users. In February 2013, automotive LPG was added as a third price category, and in September 2013, a fourth category—low-income households—was added as the government began to raise prices for other households. In December 2014, the prices charged to the first three categories were equalized, and in February 2015, all categories except that for low-income households were merged into one and no longer had access to subsidized fixed ex-gate prices. However, through frequent adjustments of the Oil Fund levy, the retail prices changed infrequently in 2015, and in November and December 2015, the Oil Fund was again subsidizing LPG. The history of the LPG pricing reform is provided in Figure 24.

Figure 24: History of differential LPG pricing in Bangkok, Thailand

Source: http://www.eppo.go.th/info/8prices_stat.htm.

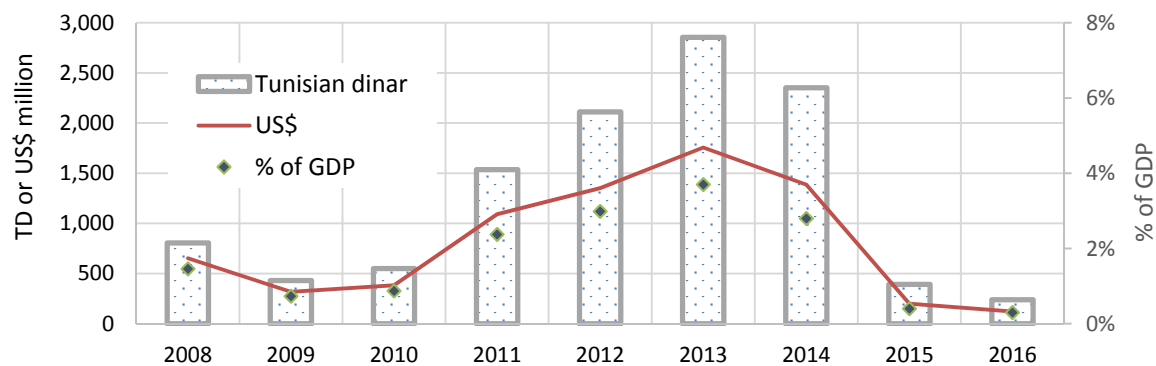
A residential consumer can purchase up to 18 kg of LPG during a three-month period at the old subsidized price if monthly electricity consumption is less than 90 kWh. Food vendors with shops smaller than 20 square meters can purchase up to 150 kg of LPG per month at the subsidized price. They first need to register at the provincial Energy Ministry office or the Energy Service Center in Bangkok (Thai PBS 2015).

PTT, and not the government, has been carrying subsidies for automotive CNG. The government had fixed the price of CNG at B 10.50 per kg for a long time, and PTT provided an additional price discount of B 2 per kg for public transportation. In October 2014, the government began to reform automotive CNG prices, raising them in succession by February 2, 2015 to B 13 per kg for private transport operators and to B 10 per kg for public transport operators. According to PTT, the cost of automotive CNG was B 15.50–16 per kg, still above the prices charged to consumers. According to *Platts*, PTT had incurred a loss of B 10 billion (US\$0.31 billion) on CNG sales in the first half of 2014, up from 8.72 billion baht (US\$0.29 billion) in the first half of 2013 (*Platts International Gas Report* 2015). In September 2015, the price of CNG was raised further to B 13.5 (US\$0.37) per kg for personal vehicles but remained at B 10 per kg for public transport operators. B 13.5 per kg was still below the cost of supply, but the loss in the first half of 2015 fell to B 5 billion (US\$0.15 billion) (*Nation* 2015b).

Tunisia

Subsidies in Tunisia for petroleum products, natural gas, and electricity amounted to 3 percent or more of GDP in recent years until 2015 (Figure 25). The IMF estimates that, at US\$86 per barrel of crude oil, domestic prices in 2014 were 96 percent of market-based prices for gasoline, 84 percent for diesel, 52 percent for kerosene, 46 percent for heavy fuel oil, 18 percent for LPG, and 71 percent for electricity (IMF 2014m). At the end of August 2015, prices of kerosene, heavy fuel oil, and LPG were still 79, 71, and 27 percent of market-based prices (IMF 2015k). The price of kerosene has not been raised since 2010 and that of LPG since 2011.

Figure 25: Central government spending on energy subsidies in Tunisia



Source: IMF 2012a, 2015k.

Note: The budgetary transfers in 2013 is a combination of energy subsidies for 2013 (TD 2,854 million) and payment of arrears for energy subsidies in 2012 (TD 880 million). The 2016 figures are projections.

The government has been gradually reducing generalized subsidies, replacing them with targeted compensation where appropriate. Energy subsidies for cement companies were reduced in January 2014 and eliminated by the end of 2014. Gas and electricity tariffs were raised in January and May 2014.

In addition to a lifeline rate for residential consumers consuming less than 100 kWh a month, a second category of a lower lifeline rate for those consuming less than 50 kWh a month was introduced in January 2014 (IMF 2014m; <http://www.steg.com.tn>).

The prices of petroleum products were lowered in 2009, raised twice in 2010, and then once a year in 2012, 2013, and 2014. Against the backdrop of the political turmoil in Tunisia and sweeping across the rest of North Africa, no price adjustments were made in 2011. None of the individual price adjustments exceeded 10 percent; the highest increase was 8.6 percent for diesel fuel in December 2010.

In January 2014, the government introduced a new pricing formula, which would raise domestic prices by TD 0.1 (US\$0.06)/liter if international prices increase by DT 10 (US\$6) per barrel—TD 0.063 (US\$0.04)/liter—in a quarter. The authorities had planned 3-percent increases in March and September 2015 for the prices of petroleum products, and 7-percent increases for the electricity tariffs of medium and low-voltage consumers in January 2015, but the electricity tariff increases were canceled. Because world oil prices had fallen far below the prices assumed in estimating subsidies, petroleum product price increases were not implemented, although the prices of kerosene and LPG for household use remained heavily subsidized. In December 2015, the Ministry of Industry, Energy, and Mines stated that the government would start applying a new automatic pricing mechanism in January 2016, with the first fuel price adjustments to be applied in July 2016 (Kapitalis 2015).

An audit of energy firms presented to the council of ministers in August 2014 found a complex web of cross-subsidies. Among them is a large subsidy historically provided through an artificially low price of crude oil sold by the national oil company to the state-owned refinery, fixed at TD 50 (US\$34–40 depending on the exchange rate) per barrel irrespective of the world price of crude. The government was to eliminate cross-subsidies for the two companies by January 2015 (World Bank 2013b, IMF 2014m). The estimation of the subsidy reimbursable to the refinery is further complicated by the fact that half of its production is exported (fuel oil and naphtha). In 2014, the refinery did not produce gasoline and imported it to meet domestic demand. While the refinery produced enough fuel oil to meet domestic demand, almost all of it was exported while imported fuel oil was used to meet domestic demand (presumably to take advantage of sulfur content or other quality differences). The net result is that, while the refinery produced half of the total domestic demand in volume in 2014, the country imported more than three times the amount of locally refined products sold on the domestic market (<http://www.stir.com.tn>).

The government is taking concrete steps to strengthen social safety nets as part of the overall reform program across the economy. The government in mid-2014 introduced a support program for households that increased transfers to the vulnerable by 10 percent; aimed to broaden the number of beneficiary families by 30,000 between 2013 and the end of 2014; provided a temporary transfer of TD 80 (US\$55) to 285,000 families when fuel prices were increased and during the Ramadan; and provided an additional transfer of TD 10 (US\$7) per month per child, up to three children per family, to vulnerable families with schoolchildren. In addition, similar to the scheme in India, the authorities are setting up a unique social identification number for each citizen, which could be used to register vulnerable households (IMF 2014i, 2015k).

Turkmenistan

In November 2014, Turkmenistan's state news service reported President Berdymukhammedov as having said during a cabinet meeting that Turkmenistan was the only country in the world that offered its population free natural gas, electricity, and water. Until July 2014, the government had also provided free transportation fuel to car owners.

Provision of free natural gas, electricity, and water began in 1991 informally and was codified in 1993. In 2003, the deadline for ending this provision of free gas, electricity, and water was extended to 2020. In 2006, the parliament voted to extend the deadline again to 2030. In July 2012, the government canceled free transportation fuel for owners of large trucks and buses. In September 2013, the government reduced the allocation of free electricity from 35 kWh per month per person to 25 kWh (*Silk Road Reporters* 2014). Car owners were entitled to 720 liters of gasoline every six months, with ration coupons distributed twice a year, but that allocation ended in July 2014 (*Azer-Press* 2014).

The quota for free natural gas is 600 m³ (21 mcf) per person per year, which amounts to almost 9 mcf a month for a family of five. The price charged for gas in excess of the quota was 2 manat (US\$0.70) per m³ (US\$0.025 per mcf) until February 2014, when it was increased tenfold to 20 manat per m³ (*Interfax* 2014). Following the recent currency depreciation to 3.5 manat to the dollar, the new price is a mere US\$0.20 per mcf. The government in 2014 began a campaign of gas meter installation in homes to promote more rational consumption of gas. The deputy prime minister in charge of oil and gas stated in a government meeting in February 2015 that 351,121 gas meters had been installed in 2014, and the plan for 2015 was to install an additional 425,000 meters (*Times of Central Asia* 2015).

Ukraine

Post-tax energy subsidies in Ukraine in 2012 amounted to 7.6 percent of GDP, of which a significant part was recorded on budget as transfers to local governments to pay heating utilities. The size of the energy subsidies decreased to about 6 percent of GDP in 2013 with falling price of imported gas, but rose to about 7 percent in 2014 because of the currency devaluation. End-user prices for industrial consumers and budget-funded entities reflect the full pass-through of imported gas prices, but until 2014 the utilities serving households received gas at 28 percent of full import pass-through price and the average household paid about 19 percent of the full import pass-through price. In 2014 utilities and households paid even a smaller fraction of the full cost of gas due to devaluation. Despite the subsidized gas input, the tariffs charged by the utilities to households were, on average, only about 60 percent of their cost-recovery level net of a return on investment.

Market prices charged to the industrial sector have stimulated energy efficiency improvement and dramatically reduced consumption. By contrast, consumption by households and district heating companies has remained stable, due to very low tariffs, low price elasticities at these tariff levels, and the absence of regulating meters to control the flow of heat at the household level. Furthermore, a cost-plus approach to pricing by district heating companies has done little to promote cost reductions through efficiency improvement. Predictably, large tariff differences across consumer groups have provided powerful financial incentives to divert gas intended for households to higher-paying industrial customers.

The Government of Ukraine in 2014 raised average residential gas tariffs by 56 percent and average residential heating tariffs by 40 percent. The government raised residential gas tariffs by 450 percent on average in April 2015 and average residential heating tariffs by 67 percent in May. To protect the vulnerable, the government introduced a lifeline (equal to half of the new gas tariffs) for those with monthly gas consumption of less than 200 cubic meters (7.1 mcf). In parallel, the 2015 budget eliminated subsidies that had supported the inefficient coal-mining industry, amounting to 0.6 percent of GDP in 2014. In mid-2015, the government stated that it aimed to reach 75 percent of cost recovery for gas and heating based on international prices by April 2016 and 100 percent by April 2017 (IMF 2015i).

To win the consumers' buy-in for the large gas and heat tariff increases, journalists were trained to explain these substantial tariff increases and social protection programs available to help the vulnerable cope with the increases. Specialized training sessions for journalists were held in seven regional centers. Regional press clubs were used as training hubs; 278 journalists participated from all Ukrainian regions (except from the Crimea and the occupied territories of Donbas). Media monitoring has shown that the quality of the public debates on tariffs has increased significantly. More than 260 print and electronic publications covering tariff issues had appeared by April 2014, including 46 television and 16 radio station broadcasts of topics covering energy subsidy reform. These programs are estimated to have reached about 14 million Ukrainian adults, or about 30 percent of the total population.

There are two social assistance programs in Ukraine that aim to help households pay utility bills. One is based on a formula and the other on categories. The first, Housing and Utility Subsidies (HUS) program, reduces spending based on the percentage of household income spent on housing and utility expenditures. Before October 2014, households spending more than 15 percent of their total income on energy purchases were considered to be energy poor and eligible for the HUS benefits. The disabled as well as families with children who spent more than 10 percent of their income on housing and utilities were also eligible for the HUS benefits. The second, Housing and Utility Privileges program, reduces the energy bills of certain social or occupational groups—such as children of war, military veterans, and Chernobyl victims—by 25 to 100 percent.

Neither program was means-tested. Both programs were regressive and supported mostly middle- and high-income households. In October 2014, the government made the HUS program progressive by linking the formula for benefit eligibility to household income.

Before 2014 tariff increases, the share of expenditures of the bottom 30 percent of households on heat and gas amounted to 7.5 percent of total expenditure, compared to 4.6 percent for the top quintile. After the 2014 tariff increases, the bottom 30 percent spent 9.4 percent on heat and gas without social assistance and 6.7 percent after social assistance. In the 2014/15 winter season, about 1.2 million households sought assistance from the HUS program.

In the 2015/16 heating season, as many as half of all households could seek assistance. The bottom 30 percent is expected to spend 17 percent of total expenditure on heating and natural gas without social assistance, and 10 percent with social assistance. By November 1, 2015, the number of households enrolled in the HUS program had nearly tripled to 3.4 million. To help the social protection system cope with such a large increase in the number of applicants, the government simplified application

procedures and streamlined the administration of the HUS program. The government allocated additional fiscal and administrative resources to help prepare for an influx of new beneficiaries, and the Ministry of Social Policy recruited an additional 1,200 staffers to process the applications. By October 2015, 3,000 officers in local social welfare offices processing applications for the HUS program had been trained on the new rules and procedures.

Government spending on social protection is expected to increase from 1.0 percent of GDP in 2015 to 1.9 percent in 2016 and 2.4 percent in 2017 (IMF 2015i). In the longer term, the government plans to integrate the energy bill assistance program into the broader social safety net system built around a reformed and affordable Guaranteed Minimum Income program.

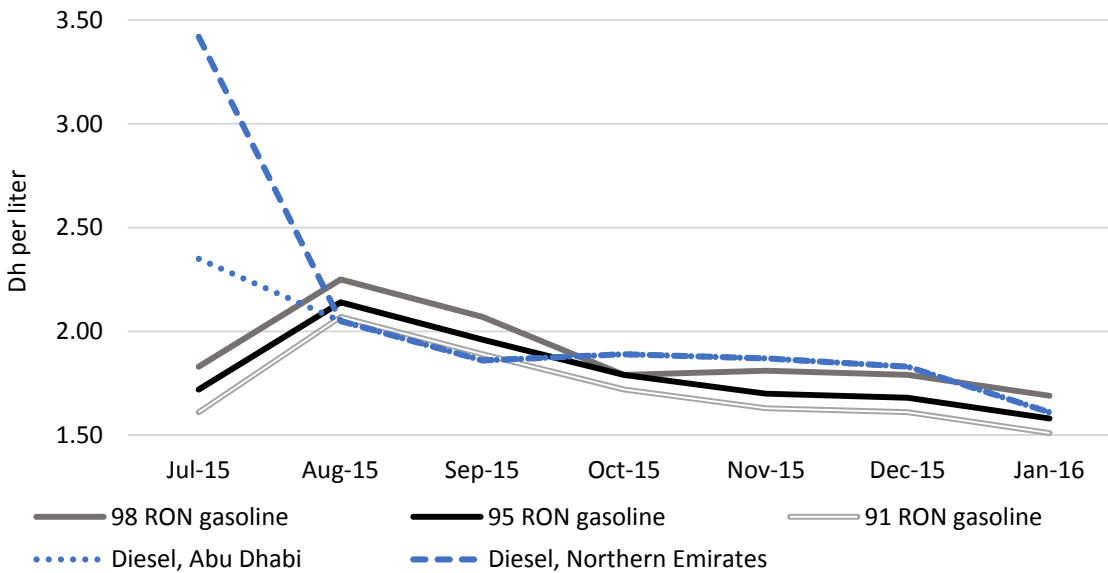
The government also plans to revise the billing method for energy, allowing bill payments to be smoothed over the year—with payments for the previous heating season completed before the beginning of the new one—to avoid an undue strain on households and maintain payment compliance.

The government will accelerate the program to install gas and heat meters to allow households to monitor and control their energy consumption. Metering is almost complete for households with individual heating using large amounts of gas, but the coverage of low-gas-consumption households is low. As of mid-2014, metering for heat was only at 36 percent. The government is targeting universal gas and heat metering and plans to move to consumption-based billing by the end of 2016. To improve energy efficiency, the government is making legislative changes to promote investment in multi-housing apartment buildings where the majority of heating losses occur (IMF 2014c; World Bank 2013c; World Bank staff estimations).

United Arab Emirates

In July 2015, the Ministry of Energy announced that gasoline and diesel prices would be “deregulated” with effect from August 1 to support the economy, lower fuel consumption, protect the environment, and preserve national resources. Although the government refers to price deregulation, economic regulation continues, with local prices linked to the international fuel price movement. The price history since July 2015 is shown in Figure 26. The price of diesel fuel has been lower in every month since July 2015, and gasoline prices have also been lower since October (98 RON), November (95 RON), and January (91 RON). The new pricing policy therefore has had little adverse short-term effects, if any.

For the monthly price adjustment, the government set up a fuel price committee, chaired by the Undersecretary of the Ministry of the Energy and including the Undersecretary of the Ministry of Finance and chief executive officers of national oil companies. The committee announces new prices on the 28th of each month for the following month. In his announcement, the Minister of Energy said that in-depth studies on long-term economic, social, and environmental effects had informed the decision, which was expected to improve the country’s economic competitiveness and investment climate, foster market-based sustainable economy, encourage the use of public transport, and build a strong economy not dependent on subsidies. The Ministry of Energy has assigned a dedicated phone number and an email address for public inquiries on the new deregulated fuel prices (UAE 2015).

Figure 26: Retail gasoline and diesel prices in the United Arab Emirates

Source: <https://www.moenr.gov.ae/en/knowledge-center/petrol-prices.aspx>.

Notes: US\$1 = Dh 3.67. The price of diesel is nationally uniform under the new pricing policy.

República Bolivariana de Venezuela

República Bolivariana de Venezuela last increased retail gasoline prices in July 1997 and the retail diesel price in April 1996. The gasoline prices remained the same from 1992 to September 1995, when the price of premium gasoline was tripled. The price of diesel fuel was frozen between 1992 and 1996. In real terms, fuel prices declined by 80 percent during the intervening period. The price increases of April 1996 were substantial: 330 percent for premium gasoline, 820 percent for regular gasoline, and 890 percent for diesel (IMF 1998). Gasoline prices were raised by 20 to 33 percent, depending on the grade, in July 1997. Fuel prices have remained frozen since, making prices in Venezuela the lowest in the world.

Large-scale smuggling to Colombia, where prices are much higher, is an inevitable consequence of the governments' fuel pricing policy. Upwards of 100 tankers' worth of fuel is estimated to be entering Colombia illegally every day. According to the government, the smuggling has cost the Venezuelan government and its national oil company an additional US\$8 billion a year. The government has introduced fuel rationing in the states bordering Colombia, and closure of the 2,200-km border every night between 10 pm and 5 am, which was expanded to include air and sea transit (BMI 2015a).

The government in July 2015 increased fuel prices along the Colombian border to market prices to stem smuggling. However, even "market" prices are low when converted to other currencies at black-market exchange rates. In August 2015, the government declared a state of emergency after three soldiers were injured in a clash with smugglers and closed the border indefinitely. A month after the first closure, the government stated that the border could remain closed for another six months (Colombia Reports 2015).

Vietnam

The Ministry of Finance and the Ministry of Industry and Trade exercise control over prices by adjusting import duties, setting rules for price changes based on the movement of the base price (which is calculated using a formula set forth in Decree 84/2009/NĐ-CP, subsequently amended in Decree 83/2014/NĐ-CP), setting ceilings on retail prices, and using transfers to and from a fuel price stabilization fund. Unit levies to finance the fund vary from fuel to fuel, with a typical rate of D 300 per unit (liter or kg). Fuel suppliers can adjust prices as long as the base price changes by less than 3 percent. The period between price adjustments is limited to a minimum of 15 days for price increases. If the base price changes by more than 3 percent but less than 7 percent, the fuel stabilization fund is used to finance 40 percent of the price increase in excess of 3 percent. If the base price changes by more than 7 percent, the government considers options in addition to the use of the stabilization fund. These changes are subject to socioeconomic considerations.

Table 19 shows adjustments made to the levies in 2015. After the first adjustment in February, the levies ranged from D 270 to D 820 per unit. In addition, although not shown, the levy on gasoline blended with 5 percent ethanol was set equal to zero to make it cheaper than gasoline and promote fuel switching from gasoline to the gasoline-ethanol blend.

Table 19: Fuel price stabilization fund levies in February 2015

Date	Unit	Gasoline per liter	Kerosene per liter	Diesel per liter	Fuel oil per kg	Gasoline per liter	Kerosene per liter	Diesel per liter	Fuel oil per kg
Prior to Feb 5, 2015		D 800	D 800	D 800	D 800	US\$0.04	US\$0.04	US\$0.04	US\$0.04
Feb 5, 2015		D 340	D 520	D 820	D 270	US\$0.02	US\$0.02	US\$0.04	US\$0.01
Feb 24, 2015		D 300	D 300	D 300	D 300	US\$0.01	US\$0.01	US\$0.01	US\$0.01
Oct 19, 2015		D 200	D 300	D 300	D 300	US\$0.009	US\$0.01	US\$0.01	US\$0.01
Since Nov 3, 2015		D 300	D 300	D 300	D 300	US\$0.01	US\$0.01	US\$0.01	US\$0.01

Source: Ministry of Finance.

The transfers from the fund can be substantially larger, and have not always followed the above rules. For example, despite the fact that the increase in the base price from the previous period for every fuel was more than 12 percent on February 24, 2015, the Ministry of Industry and Trade cited socioeconomic considerations, did not change prices, and allowed large withdrawals from the stabilization fund combined with a reduction in the fund levy for gasoline, kerosene, and diesel (BCT-TTTN No. 1860). Consequently, large net withdrawals from the fund had to be made on March 11 (Table 20), because by March 10, the difference between the base price (item 10 in the table) and the retail price had widened to reach a deficit of D 3,468 (US\$0.16) per liter of 92 RON gasoline (VINPA 2015). The retail prices were increased by 10 percent for gasoline and 4.5 percent for kerosene and diesel on March 11, but these price increases were not sufficient.

Table 20: Cost structure and transfers to and from the petroleum price stabilization fund effective March 11, 2015

No.	Unit	92 RON gasoline liter	Diesel fuel liter	Kerosene liter	Fuel oil Kg
1	FOB per unit	US\$0.46	US\$0.46	US\$0.46	US\$0.35
2	CIF per unit	US\$0.47	US\$0.48	US\$0.48	US\$0.38
3	CIF per unit in local currency	D 10,019	D 10,175	D 10,144	D 8,073
4	Import duty	35%	30%	35%	35%
5	Excise tax (on 3+4)	10%	0%	0%	0%
6	Profits and other costs per unit	D 1,350	D 1,250	D 1,250	D 900
7	Stabilization fund levy per unit	D 300	D 300	D 300	D 300
8	Environment tax per unit	D 1,000	D 500	D 300	D 300
9	VAT (on sum of 3–8)	10%	10%	10%	10%
10	Base price per unit	D 19,281	D 16,805	D 17,099	D 13,638
11	Retail price per unit	D 17,280	D 15,880	D 16,320	D 12,760
10	Difference (11 - 10)	-D 2,001	-D 925	-D 779	-D 878
11	Transfer from stabilization fund	D 1,852	D 888	D 837	D 927
	Transfer in US\$ per unit	US\$0.09	US\$0.04	US\$0.04	US\$0.04

Source: <http://hiephoixangdau.org>, modified to correct minor calculation inconsistencies.

Note: Diesel fuel is the grade with 0.05 percent sulfur and fuel oil has 3.5 percent sulfur.

Each oil company keeps its own account of the transfers in and out of the stabilization fund, so that at a given time it is possible for the fund balance to be positive for some companies and negative for others, as reported in October 2013 (*VietQ* 2013). The balance of the fund as a whole has become negative in the past. For example, the balance in March 2013 was -D 430.9 billion, or -US\$21 million (Vietnam News 2013). More recently, thanks to low world petroleum product prices in the last quarter of 2014, the fund balance surged to an all-time high of D 4,019 billion (US\$188 million). The balance, however, more than halved in the next six months. Large withdrawals during the first three months of 2015 decreased the balance to D 2,844 billion (US\$132 million) and further to D 1,794 billion (US\$82 million) by June 2015, before rising to D 2,776 (US\$123 million) at the end of September 2015 (Vietnam 2015a–c).

The import duties (item 4) in Table 20 (lowered subsequently in April and May 2015) are for fuels imported from countries outside of those with whom Vietnam has trade agreements: ASEAN (Association of Southeast Asian Nations) Trade in Goods Agreement, ASEAN-China, and ASEAN-Korea. The duties in these trade agreements are lower, and in fact under the first agreement the import duties on kerosene, diesel, and fuel oil were eliminated on January 1, 2016 and that on gasoline will be eliminated in 2018. The government in March 2015 announced its intention to standardize import duties across all suppliers, without giving a timeline. Standardizing import duties would substantially diminish or even eliminate the government's ability to smooth price volatility by adjusting import duties, which have at times been reduced to zero in the past in times of rapidly rising world oil prices. The import tariff reform will provide a further impetus to taking steps toward price deregulation.

Vietnam has struggled to combat fuel smuggling, given powerful financial incentives. The finance ministry issued a statement in March, announcing that the government would triple the environmental protection tax (item 8 in Table 20) from May 2015. In making the announcement, the finance ministry

added that the higher environmental protection tax would help bring retail prices in Vietnam closer to those in the neighboring countries. The statement noted that, just before the fuel price increases of March 11, 2015, the average price of 92 RON gasoline in Vietnam was D 4,198 (US\$0.20) per liter lower than in Cambodia, D 5,290 (US\$0.25) per liter lower than in the Lao People's Democratic Republic, D 918 (US\$0.04) per liter lower than in China, and D 2,045 (US\$0.10) per liter lower than in Thailand (*Platts Commodity News* 2015c).

Coal for the domestic market is priced at a 10-percent discount to export parity (NĐ 177/2013/NĐ-CP), with the exception of the power sector. Coal supplied to the power sector since July 2014 has been priced at the cost of production plus a reasonable rate of return. As Vietnam turns increasingly to imported coal in the future, this pricing policy may need to be modified.

In the power sector, tariffs are not yet at cost-recovery levels. Tariffs have been adjusted several times since 2010, but the scheduled adjustment in 2014 did not take place. Tariffs were last increased in March 2015, when Decision 2256/QĐ-BCT raised the average tariff by 7.5 percent from D 1,508.85 (US\$0.070)/kWh, effected in June 2014, to D 1,622.01 (US\$0.076)/kWh.

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