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GLOBAL ENERGY PRICES

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DATA COVERAGE

The table below shows the percent change in the prices of electricity, octane-95 gasoline, and regular diesel fuel from Q3 2018 to Q4 2018. The coverage is 97 countries that consume over 90 percent of the world energy. The price of electricity is measured in local currency per kWh of power and the fuel prices are in local currency per liter of fuel. These are final prices paid by retail consumers after all taxes and fees.

This report describes only the percent changes between the average price levels of the two quarters while the most current price levels can be seen at www.globalpetrolprices.com. The notes following the table describe our data collection methodology.

FUEL PRICES

The price of crude oil – the key driver of fuel prices – was quite volatile in the last several months. Following a relatively stable period of about 70-75 USD per barrel during the summer months, Brent prices started increasing towards the end of the summer and reached over 85 USD per barrel by October. The main reason was the anticipated U.S. sanctions on Iran that threatened to reduce the global oil supply by limiting Iranian oil exports. By mid-fall, it became clear that key countries would be exempts from the sanctions, most notably China, and the price of oil started to decrease. Growing concerns over global economic growth accelerated the decline and by the end of Q4 2018 Brent oil prices traded below 60 USD per barrel. On average for the quarter, however, the price level was similar to that in Q3 and, hence, we do not observe large fuel price movements.

Argentina is a notable exception as fuel prices increased significantly in line with the overall high inflation and depreciating currency. Similarly, fuel prices in Zambia increased substantially as a result of the local currency depreciation. In contrast, in Azerbaijan – a country rich in energy resources – the government lowered the price of gasoline.

This quarter gave new evidence how sensitive people are to fuel price increases. A proposed increase in fuel taxes in France sparked the massive "yellow jackets" protest. The proposal was swiftly abandoned. Earlier, large protests in India forced the government to lower fuel taxes in

order to keep fuel prices from increasing with the rise in crude oil prices. A week before this writing, the government of Zimbabwe raised fuel prices to stem the outflow of foreign exchange reserves (used to import fuel). People took to the streets in large numbers. These public reactions around the world will give pause to any politician who plans similar moves.

Overall, oil prices continue their seesaw trajectory. Typically, reduced supply from a key oil producer sparks an oil price rally that seems to feed on itself until Brent prices reach about 80-85 USD per barrel. Then, new supply from the U.S. and elsewhere puts a limit on further increases and prices soon start to decrease. When they reach about 50-55 USD per barrel, high-cost supply is taken off market and OPEC steps in to prop up prices by limiting supply. The upward price move starts. That pattern will probably continue unless we experience major and sustained supply disruptions somewhere in the world.

In countries with relatively free fuel markets where suppliers can import fuel and compete with each other, these movements in the price of crude oil become reflected in retail fuel prices within 2-3 weeks. Depending on the level of excise taxes, a given increase in the price of crude oil leads to different changes in fuel prices. For example, in the U.S. where taxes are relatively low, a ten percent change in the price of crude oil leads to about seven percent change in retail fuel prices. In Europe, where taxes are relatively high, a ten percent change in oil prices leads to about three percent change in fuel prices. Changes to crude oil prices affect the fuel prices in countries with regulated fuel markets too but the extent and speed of that effect depends on the frequency of regulatory price adjustments and the formula used by the regulator.

ELECTRICITY PRICES

Electricity prices kept relatively stable since Q3 2018 with some exceptions. They increased significantly in Argentina where overall inflation toped 40 percent for the year. There was a large drop in prices in Kenya where the government reversed some policies from earlier this year that had pushed prices up significantly. Electricity prices also came down in Norway after the summer drought had contributed to exceptionally high prices. Prices in Norway reverted to their more typical level for this time of the year.

Overall, countries that rely on oil for electricity production had some space to lower prices as crude oil prices declined during the last weeks of 2018. In contrast, countries that rely on natural gas experienced the opposite as those prices shot up in the early part of Q4 2018.

The table does not show regional data for conciseness but, as we have observed in the past, the electricity prices in the U.S. states are more closely linked to market conditions and are more volatile - also moving in various directions - compared to what we observe across countries around the world. The regional prices in Canada and Australia are more in line with movements in the national averages for those countries.

Country	Percent change in prices from Q3 2018 to Q4 2018		
	Electricity	Gasoline	Diesel
Algeria	0.00	0.00	0.00
Argentina	31.84	25.94	28.92
Aruba	0.00	-0.01	4.31
Australia	0.00	-0.40	3.43
Austria	4.15	-0.12	4.15
Azerbaijan	0.00	-28.03	0.00
Bahrain	0.00	0.00	0.00
Bangladesh	0.00	0.00	0.00
Barbados	-6.61	-2.22	0.47
Belarus	0.00	7.96	7.96
Belgium	0.00	-5.00	1.72
Belize	0.00	-1.32	-0.79
Bermuda	-1.47		
Bolivia	-0.37	0.00	0.00
Brazil	1.51	2.38	7.31
Bulgaria	5.26	-2.37	1.80
Cameroon	0.00	0.00	0.00
Canada	0.00	-10.49	-0.53
Chile	-5.03	2.28	7.09
China	0.00	1.14	1.48
Colombia	0.90	2.18	2.72
Costa Rica	-1.15	-1.38	5.51
Croatia	-3.17	-8.43	-0.49
Czech Republic	1.36	-0.47	2.20

Country	Percent change in prices from Q3 2018 to Q4 2018		
	Electricity	Gasoline	Diesel
Democratic Republic of Congo	0.00	7.03	7.07
Denmark	-0.57	-4.79	1.11
Dominican Republic	0.00	-6.05	-1.47
Ecuador	0.00	1.79	-0.05
Egypt	0.00	0.00	0.00
Finland	4.76	-2.48	5.16
France	0.00	-3.48	1.20
Germany	5.02	1.09	3.43
Ghana	0.00	2.96	4.89
Greece	-1.69	-3.54	0.36
Guatemala	-0.60	-5.40	2.47
Hong Kong	7.26	-1.26	0.54
Hungary	0.00	-5.38	1.89
India	-0.73	-2.12	0.97
Indonesia	0.00	6.60	8.57
Iran	1.69	0.00	0.00
Iraq	0.00		
Ireland	-4.82	-0.08	1.73
Israel	0.00	-2.87	-3.09
Italy	6.28	-1.11	1.26
Ivory Coast	0.00	3.11	0.47
Japan	7.10	0.98	2.15
Jordan	0.00	-2.83	-0.18
Kazakhstan	-1.50	1.15	10.83
Kenya	-29.21	1.76	5.46
Kuwait	0.00	0.00	0.00
Latvia	3.77	-0.86	3.62
Luxembourg	1.10	-6.08	1.07
Liechtenstein	0.00	2.71	2.97
Lithuania	0.00	3.03	7.04
Macau	-1.59		

Country	Percent change in prices from Q3 2018 to Q4 2018		
	Electricity	Gasoline	Diesel
Malaysia	0.00	0.00	0.00
Mexico	0.00	3.96	3.25
Morocco	0.00	-3.09	-2.05
Myanmar	0.00	10.82	17.48
Netherlands	0.52	-4.54	0.80
New Zealand	0.00	-1.01	1.25
Nigeria	0.00	-1.00	2.68
Norway	-10.19	-2.76	2.35
Pakistan	0.00	-0.16	-2.22
Panama	0.61	-6.27	0.88
Peru	0.92	2.73	4.83
Philippines	1.06	-0.92	-1.59
Poland	2.05	-1.10	3.49
Portugal	-1.53	-4.91	0.66
Qatar	0.00	-2.63	-0.87
Romania	11.82	-3.51	-0.04
Russian Federation	0.00	0.55	3.07
Saudi Arabia	0.00	0.00	0.00
Serbia	4.27	-0.28	1.96
Singapore	8.86	-0.94	2.05
Slovak Republic	0.00	-3.88	1.85
Slovenia	-0.57	-3.73	2.82
South Africa	0.10	2.42	6.65
South Korea	0.00	-3.12	-0.45
Spain	-2.45	-3.40	-0.45
Sri Lanka	0.00	4.09	-3.62
Sweden	0.81	-6.73	0.11
Switzerland	0.00	-0.74	2.52
Taiwan	0.00	-4.78	-6.12
Tanzania	0.00	0.61	3.21
Thailand	0.00	-2.37	-3.15

Country	Percent change in prices from Q3 2018 to Q4 2018		
	Electricity	Gasoline	Diesel
Tunisia	0.00	2.16	2.47
Turkey	8.94	-0.71	3.25
Uganda	-0.21	1.83	2.90
Ukraine	0.00	6.64	12.58
United Arab Emirates	0.00	-3.88	3.49
United Kingdom	8.09	-1.67	1.77
United States of America	-1.76	-6.38	0.94
Uruguay	0.00	0.64	0.00
Uzbekistan	9.36	2.99	2.80
Vietnam	0.00	-3.19	0.69
Zambia	0.00	15.60	20.41

DATA COLLECTION - FUEL PRICES

For each country, we use at least three independent sources including the Ministries of Energy, Transport, or Commerce; fuel price transparency mechanisms; local automobile associations; consumer advocacy groups; international fuel companies; local petroleum monopolies; multilateral organizations; and the local media. The data are checked against the three sources for consistency. We have collected the fuel price data on a weekly basis since 2014. Below are a few examples:

Belgium

We monitor the retail fuel prices at these service stations: Lukoil, Q8, Shell, and Texaco. We compare the prices with the data from the Weekly oil bulletin of the European Commission. We also track the official maximum prices announced by the Ministry of Economic Affairs. We follow the fuel market information released by the Belgian Petroleum Federation and the Statistical Office of Belgium. We use fuel price data from two local online fuel price platforms

Ghana

We use the fuel price data and fuel market information released by the National Petroleum Authority. We monitor the pump prices at the Total and Allied service stations. We check the publications of the Energy Media Group. We keep track of the government announcements concerning the fuel market.

Indonesia

We use the fuel price data and fuel market information released by the Ministry of Energy and Mineral Resources. We keep track of the publications of Pertamina. We also monitor the pump prices at Pertamina and Shell service stations. We follow the fuel market information released by the local news portals and by international media sources.

Jordan

We monitor the fuel price data published by the Jordan Petroleum Refinery Company. We use fuel price data from a regional fuel price online platform. We keep track of the announcements of the Jordanian government. We also follow the fuel market information released by regional media sources.

DATA COLLECTION – ELECTRICITY PRICES

Very few countries report up-to-date statistical data on electricity prices. Therefore, we collect data from the current price offers of electricity companies and produce a national average that takes into account the market shares of those companies and the relative population of regions within the country.

For each country, we investigate the structure of its electricity market and answer the following questions: Are prices set by a regulator or the market? What companies handle the distribution of energy and what companies sell electricity? How many companies serve the households and what are their market shares? What is the average household consumption of

electricity according to national sources and the World Energy Council? Are prices determined on a regional basis or nationwide? What are the types of contracts available: fixed, variable, spot? What are the current price packages? Are there any taxes and fees that are not reported in the contracts but consumers actually pay?

Answering these questions allows us to compute a national average price based on the specifics of each country. Below are a few examples:

Australia

Five of the Australian states: the Australian Capital Territory, New South Wales, Queensland, South Australia, and Victoria have liberalized electricity markets while the Northern Territory, Tasmania, and Western Australia regulate the electricity prices. In the liberalized markets, we take the prices of the largest electricity suppliers in the capital cities:

- ActewAGL in the Australian Capital Territory;
- AGL, Energy Australia, Red Energy, and Origin Energy in New South Wales;
- AGL, Energy Australia, and Origin Energy in Queensland (and Ergon Energy in the remote areas);
- AGL, Origin, and EnergyAustralia in South Australia; and
- AGL Victoria, Energy Australia, and Origin Australia in Victoria.

In the states with regulated electricity prices, we take the tariffs from the regional regulators: The Utilities Commission of the Northern Territory (Jacana Energy as a major supplier); the Tasmanian Economic Regulator (usually sets the electricity rates once per year and the only supplier is Aurora Energy); and the Government of Western Australia (with Synergy as a major electricity supplier).

The national average electricity price for Australia is a weighted average price per kWh using the relative population of each state. We take into account the level of annual household electricity consumption for each state: 9316 kWh (Australian Capital Territory), 6753 kWh (Northern Territory), 6935 kWh (New South Wales), 5512 kWh (Queensland), 6059 kWh (South Australia), 9939 kWh (Tasmania), 7008 kWh (Victoria), and 6205 kWh (Western Australia).

Ivory Coast

Companie Ivorienne d'Electricite (CIE) controls the distribution and sale of electricity in the Ivory Coast. The National Electricity Sector Regulatory Authority (ANARE) regulates the electricity sector and, in particular, it proposes the electricity tariffs to the state.

The electricity bill in the Ivory Coast is bimonthly. It consists of two consumption tiers. The first is related to households whose consumption is between 0 and 80 kWh while the second is for consumption above 80 kWh. The second tier is two times more expensive than the first one. Only the electricity above 80 kWh is charged with VAT. In addition, there is a fixed bimonthly energy charge paid regardless of the level of consumption. The other components of the price are the rural electrification fee, the variable RTI fee, and the municipal tax.

Sweden

Swedish households sign two contracts to have access to electricity: 1) one with a distributor company that maintains the physical infrastructure and 2) another with an electricity supplier that sells electricity. The country is divided into four regions for the purposes of electricity distribution but there can be multiple distributor companies within a region with Ellivio, E.on and Vattenfall as leaders in the market. Customers pay a fixed monthly amount and a per kWh amount to the distribution companies that vary substantially across regions. For example, the fixed monthly fees in the North region are more than double what households in Stockholm pay because the cost of the maintenance of the electricity grid is spread among fewer consumers in the sparsely populated North region. These prices are regulated by the Swedish government as each distributor is a natural monopoly in the area where it operates.

There are numerous suppliers of electricity across all of Sweden with a large variety of choices in terms of packages. In fact, households can choose from over 500 contracts with fixed or flexible prices and by selecting the type of energy source: wind, solar, or hydro. Yet, competition ensures that the cost in these contracts expressed in kronas per kWh are very similar across the companies and the regions of Sweden as suppliers have access to the same wholesale market: the NordPool energy bourse. Hence, almost all of the variation between regions in terms of retail electricity prices comes from the fixed cost of distribution.

To compute the average prices we identified the main distributor companies in the four regions of the country and obtained their distribution charges. Then, for the largest cities in each region we obtained the average cost in the electricity contracts for all electricity suppliers. The sum of the two gives the total average per kWh cost. The calculations are based on 8000 kWh consumption per year.

United Arab Emirates

To calculate the national average electricity price, we take into account the tariffs offered by the three suppliers operating in the two largest Emirates - Abu Dhabi and Dubai. The Al Ain Distribution company provides electricity in the eastern part of Abu Dhabi whereas the Abu Dhabi Distribution Co. supplies the rest of the Emirate. The Emirate of Dubai is supplied by the Dubai Electricity Authority.

We take the electricity prices of the three companies and use the population of each Emirate to derive a weighted average price per kWh for the country. We take into account the fact that in Abu Dhabi the majority of the population are immigrants and are charged higher electricity rates compared to UAE citizens. Hence, for this Emirate, we calculate a weighted average price taking into account the two different rates. The average annual consumption per household in the UAE is about 17 000 kWh.