12. Debt generators: the case of energy subsidies

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1. INTRODUCTION AND CONTEXT

Pakistan and Sri Lanka have a long history of high public debt and frequently experienced macroeconomic instability, as evidenced by repeated International Monetary Fund (IMF)-supported bailout programs. Both countries have also pursued for decades a policy of providing electricity (and other energy products) below cost, combined with a heavy role of state-owned enterprises (SOEs) in producing and distributing energy. This chapter explores the links between energy policy and public (and external) debt sustainability in Sri Lanka and Pakistan over the last two decades. It shows that energy policy has contributed to the buildup of public and foreign debt in both countries, quite substantially so in Pakistan where at least a quarter of its public debt can be attributed to the direct and indirect impact of energy policy. For Sri Lanka, the contribution of energy policy to debt is much less (about one-tenth), which as a brief comparison with a few other Asian countries indicates, may be more typical for developing countries.

Linkages between energy policy and debt potentially arise whenever energy is sold below (world) market prices. A direct linkage arises whenever energy is sold below cost, as losses will have to be absorbed by the public sector, directly affecting the fiscal position and thus public debt (losses may be temporarily borne by public enterprises in the energy sector but will eventually affect the general government finances). Secondary effects may then impact growth, inflation, and interest and exchange rates. An indirect linkage arises if energy produced domestically is sold below world market prices (but at or above cost). The opportunity cost of such policy (such as lower gross domestic product (GDP), lower fiscal revenue) implies actual public debt is higher than it would have been under market pricing of energy.

Pricing of energy below cost may arise notably if countries, *de facto* or *de jure*, treat household access to electricity as a “right”, largely divorced from the willingness or ability of households to pay (Burgess et al. 2020). This approach is widespread in the developing world, and universal access to electricity (by 2030) has been enshrined as the seventh of the United Nations Sustainable Development Goals. Apart from sociopolitical considerations, the approach is motivated by the belief that widespread access to electricity can boost growth. Indeed, there is evidence that household access to electricity can boost income (IEA 2018), mainly through boosting labor supply (Dinkelman 2011), but likely only if complementary conditions are met that position households to take action and make the complementary investments that will allow them to make good use of an electricity connection (Lee et al. 2020, p. 141).

The approach has several consequences: with many customers unable (or unwilling) to pay, and the public utilities not authorized to take away this “right”, utilities will incur losses. Since cash-strapped governments rarely fully cover these losses, utilities will ration supply (through involuntary or targeted outages) and/or underinvest in maintenance (reflected for example in high transmission losses²) and new capacity, all affecting growth. Utilities may also attempt to finance losses at least temporarily by borrowing from banks or incurring arrears to their suppliers (such as fuel suppliers for thermal power). In any case, energy sector SOE debt will increase. Increased public sector debt may in turn affect risk premia on interest rates and exchange rates, further adding to debt. In addition, there will be welfare losses: some customers willing and able to pay will still be rationed. The experience in Pakistan and Sri Lanka, but also in other countries, illustrates many of these points.

Access to energy as a “right” may well extend beyond electricity. Major energy producers, in particular, will face strong popular pressure to “share” the bounty of domestic energy resources with the population through fuel prices below world prices. In virtually all developing major oil producers, for example, gas prices at the pump are far below the prices that export of the fuel could fetch on world markets.

Table 12.1 Debt and energy policy indicators for selected countries (% of GDP)

Country	Energy Subsidy			Public Debt	Household Access to Electricity		T&D Losses	Firm Sales Lost to Electricity Outage (% of total)	Year of Observation
	2010	2019	Average 2010–2019		2010	2018	Average 2010–2014		
Bangladesh	4.9	0.5	2.6	34.6	55.3	85.2	11.4	5.5	2013
India	1.1	0.7	1.3	69.0	76.3	95.2	19.2	3.7	2014
Indonesia	2.0	1.7	2.5	30.3	94.2	98.5	9.3	1.9	2015
Iran	14.4	18.8	16.1	30.7	99.0	100.0	14.1	...	
Malaysia	1.1	0.5	1.0	56.3	99.2	100.0	6.3	1.8	2015
Pakistan	3.8	0.7	2.3	76.7	70.4	71.1	16.7	33.8	2013
Sri Lanka	0.7	0.6	0.5	83.0	85.3	99.6	11.5	3.0	2011
Thailand	1.4	0.1	0.7	42.4	99.7	100.0	6.2	4.1	2016
Viet Nam	2.9	0.1	1.1	54.3	98.5	100.0	9.5	2.2	2015

Notes: GDP = gross domestic product; T&D = transmission and distribution; ... = data not available.

Sources: Subsidies from IEA; public debt is IMF estimate as of October 2020; all other data from World Bank, World Development indicators.

Table 12.1 illustrates some relevant observations for a few major Asian countries. The data on subsidies are the estimates of the International Energy Agency (IEA) for the difference between domestic and world prices, excluding hydro-energy. Thus, they capture both the “direct” subsidies as well as the “opportunity cost” for energy producers selling domestically below world prices. The latter feature is of course dominant in the case of Iran, as a major energy producer and net exporter, but also relevant for Pakistan, which has a sizable domestic gas production. The data also point to access to electricity as a major policy goal in all the countries, and hints

at some of the problems that seem to accompany high subsidies and a dominant role of SOEs in energy: relatively high transmission and dispatch losses (a symptom of inefficient energy firms) and some anecdotal evidence of the growth effects of such inefficiency (share of sales lost due to electricity outage). While these linkages will be explicitly explored only for the two case studies, many of the findings may well apply to other countries in Table 12.1 (and beyond). Furthermore, in many of these countries similar difficulties were encountered during attempts at subsidy reform, as discussed below.

2. PUBLIC AND FOREIGN DEBT IN PAKISTAN AND SRI LANKA, 2000–2019

2.1 Public Debt

For our purpose we define gross public debt $pd(t)$ in year t , as a share of GDP, as general government plus government-guaranteed debt of public enterprises. General government debt has been reported by Pakistan and Sri Lanka throughout 1999–2019, and we use the data from the IMF World Economic Outlook (vintage April 2020). While the Pakistan data include outstanding debt to the IMF, Sri Lanka's IMF debt is added (from the IMF's International Financial Statistics). Only since 2009 does Pakistan also report the guaranteed and non-guaranteed debt of SOEs, which explains largely the sharp jump in $pd(t)$ in this year (Figure 12.1). Furthermore, Pakistan reports debt (as well as fiscal and balance of payments data) on a fiscal year basis.³ For a few data from other sources that are on a calendar year basis, we estimate the corresponding fiscal year data as average of the corresponding consecutive calendar year data. Sri Lanka reports guaranteed debt only since 2015 and non-guaranteed SOE debt since 2016. Again, this explains largely the jumps of $pd(t)$ in these years. Total foreign debt $fd(t)$ in year t , as a share of GDP, includes private- and public foreign debt. Figure 12.1 and Figure 12.2 show the evolution of total foreign debt, government and government-guaranteed debt, and non-guaranteed SOE debt for each country (for the years available). Since some of the non-guaranteed SOE debt may be owed to other SOEs (as is indeed the case for energy SOEs in both countries, as discussed below), non-guaranteed debt cannot simply be added to gross public debt to obtain a broader measure of public sector debt. Nevertheless, non-guaranteed debt may eventually fall to the government (or come under guarantee); examples for such transactions involving energy sector SOEs will be discussed below.

Note: GDP = gross domestic product; SOE = state-owned enterprise.
Source: International Monetary Fund, World Economic Outlook (October 2020).

Figure 12.1 Pakistan: public and foreign debt (% of GDP)

Note: GDP = gross domestic product; SOE = state-owned enterprise.
Source: International Monetary Fund, World Economic Outlook (October 2020).

Figure 12.2 Sri Lanka: public and foreign debt (% of GDP)

2.2 The Main Factors Driving Public Debt

From standard debt dynamics⁴ the equation of motion for public debt that explicitly accounts for the contributions of guaranteed debt, IMF debt, and the assumption by the government of SOE liabilities is:

$$\begin{aligned} pd(t) - pd(t-1) = & pd(t-1) * \{ir^*(t) - g(t)\} / (1 + g(t)) + \\ & (s(t-1) * pd(t-1) * \{1 + eeop(t)\} / \{(1 + g(t)) * (1 + \pi(t))\} \\ & - pb(t) + imf(t) + a(t) + q(t) \end{aligned} \quad (12.1)$$

where $g(t)$ is the real growth rate, $\pi(t)$ the inflation rate (change in GDP deflator), $(Eeop(t) - Eeop(t-1))/Eeop(t-1) = 1 + eeop(t)$ the rate of depreciation of the end-of-year exchange rate $Eeop(t)$ (against the US dollar), and $s(t)$ the share of foreign-currency-denominated debt. The real effective interest rate ir^* is defined through $1 + ir^* = (1 + i^*) / (1 + \pi)$, with $i^*(t) = ((1 - s(t-1)) * id(t) + s(t-1) * if(t)) * (Eavg(t)/Eeop(t-1))$ the effective interest rate on public debt, a weighted average of domestic ($id(t)$) and foreign ($if(t)$) interest rates that also takes account of how exchange rate movements will affect the local currency value of interest payments on the foreign component. Finally, $imf(t)$ denotes the change in IMF debt, $a(t)$ the assumption of SOE debts not previously recorded as guaranteed, and $q(t)$ any other factors contributing to the change in public debt. Such factors include exchange rate effects that arise if some of the forex-denominated debt is denominated in currencies other than the US dollar and there have been movements between these foreign currencies; changes in liquid financial assets of the government (i.e., changes to the difference between net and gross debt); any debt forgiveness (say in the context of Paris Club debt treatments); and errors and omissions, such as those arising from the simplifying assumption that interest payments in year t are paid on the stock of debt at the end of year $t-1$.

The first term in (12.1) quantifies the role of the real interest–growth differential in debt dynamics: if the real interest rate exceeds growth, interest payments on existing debt will contribute to an increase in the debt ratio, outweighing the effect of nominal GDP growth in reducing the value of existing debt. The second element highlights the impact of exchange rate changes: for example, a depreciation ($Eeop(t) > Eeop(t-1)$) will tend to increase the debt ratio through its valuation effect on existing foreign-denominated debt. The size of the increase will depend on the rate of depreciation, on the share $s(t)$ of foreign-denominated debt in total public debt, and on nominal GDP growth. The third term quantifies how a primary deficit ($pb(t) < 0$) will increase the debt ratio. Independent from these factors are changes in IMF debt (reflecting balance of payments financing), and the change in guaranteed debt from the assumption of previously non-guaranteed SOE debt.

Figures 12.3 and 12.4 and Table 12.2 (first column for each country, respectively) illustrate the relative importance of these factors for the evolution of actual debt stocks in the two countries during 2000–2019.⁵ In both countries, the average annual increase in the debt ratio was quite similar (0.7 percentage points of GDP in Pakistan, 0.6 in Sri Lanka) and accordingly the cumulative increase during 2000–2019 quite similar (13 points for Pakistan and 12 points for Sri Lanka). In most years, the real interest–growth differential has been a sizable factor and nearly always tended strongly to reduce the debt ratio. This reflects that both countries have been able to borrow at relatively low interest rates both domestically and abroad (much of the

foreign public debt is quite concessional), while growth has been relatively high (it averaged 4.4 percent for Pakistan and 5.2 percent for Sri Lanka during 2000–2019), as has been inflation (as measured by the GDP deflator), averaging about 8 percent for both countries.

With the exception of the early 2000s for Pakistan, primary fiscal balances were mostly negative and have contributed to an increase in public debt in both countries. Indeed, for the entire period the primary deficit averaged 0.7 percent of GDP for Pakistan and 1.4 percent for Sri Lanka.

Both countries' currencies have experienced in virtually all years a depreciation against the US dollar, for a cumulative depreciation during 2000–2019 of about 200 percent for Pakistan and 170 percent for Sri Lanka. As a result, exchange rate movements have in most years contributed to an increase in the public debt ratio, in some years quite sizably.

There have also been small changes in guaranteed debt in both countries, as well as in some years assumptions of SOE debt, much of it related to energy sector SOEs as discussed below. The average annual contribution of IMF debt to public debt has been virtually nil in both countries (and is absorbed in the residual in Table 12.2).

Finally, for both countries, factors other than the ones identified above have played an important role.⁶ Since in both countries some of the foreign component of public debt is denominated in euro or yen, cross-movements between these foreign currencies and the US dollar may explain some of the residual. In some years, at least for Pakistan (where data on both net and gross public debt exist), the change in liquid financial assets (buildup in government deposits) explains close to 1 percentage point of GDP in the change of the public debt ratio. Both countries had debt treatments under the Paris Club (Pakistan in 1999 and 2001, Sri Lanka in 2005) but these basically only changed the terms of repayment, apart from the usual provision of allowing part of the treated debt to be swapped into local currency to support aid or environmental projects, or equity for development purposes. Regarding non-Paris Club creditors—for both countries, the People's Republic of China (PRC) and for Pakistan also Saudi Arabia are important creditors—it seems possible that some debt forgiveness or debt–equity swaps have taken place, but the amounts are difficult to quantify.

Table 12.2 *Public debt in Pakistan and Sri Lanka, 2000–2019 (percentage points of GDP, annual average)*

	Pakistan			Sri Lanka		
	Actual	Market	Fiscal Reform	Actual	Market	Fiscal Reform
Change in debt ratio	0.7	−0.6	−0.1	0.6	0.1	0.2
Interest–growth differential	−3.0	−2.8	−2.8	−4.7	−4.5	−4.6
Primary balance	0.7	−0.2	−0.2	1.5	1.0	1.0
Depreciation impact	1.4	1.1	1.2	1.6	1.5	1.6
Assumption of SOE debt	0.3	0.0	0.3	0.1	0.0	0.1
Residual	1.3	1.3	1.3	2.1	2.1	2.1
Change in stock of debt 2000–2019 (percent of GDP)	13.1	−11.7	−2.2	11.8	2.8	3.3

Note: GDP = gross domestic product, SOE = state-owned enterprise.
Sources: Author's calculations and IMF, World Economic Outlook (October 2020).

Note: GDP = gross domestic product; IMF = International Monetary Fund.

Sources: Author's calculations; and IMF, World Economic Outlook (October 2020).

Figure 12.3 Pakistan: government and guaranteed debt and contributing factors

Note: GDP = gross domestic product; IMF = International Monetary Fund.

Sources: Author's calculations; and IMF, World Economic Outlook (October 2020).

Figure 12.4 Sri Lanka: government and guaranteed debt and contributing factor

2.3 Foreign Debt

Analogous to (12.1), the equation of motion for the total foreign debt ratio $fd(t)$ (ignoring mixed terms $eeop*if$ and $g* \pi$ which are negligible) is:

$$fd(t) - fd(t-1) = [\{if(t) + eeavg(t) - g(t) - \pi(t)\} / \{1 + g(t) + \pi(t)\}] fd(t-1) - pca(t) - ndcff(t) + q(t) \tag{12.2}$$

The first term again describes the impact of an adjusted real interest–growth differential: if the foreign interest rate adjusted for exchange rate movements and domestic inflation exceeds the growth rate ($if(t) + eeavg(t) - \pi(t) > g(t)$), interest payments on existing debt will contribute to an increase in the debt ratio, outweighing the effect of nominal GDP growth in reducing the value of existing debt. A primary current account deficit ($pca(t) < 0$) will increase foreign debt, while positive non-debt creating financing flows ($ndcff(t) > 0$), such as foreign direct investment (FDI) inflows or a use of gross reserves to finance the balance of payments, will decrease debt. Finally, q captures any other factors, including errors and omissions.

Figures 12.5 and 12.6 and Table 12.3 illustrate the relative importance of these factors for the two countries.

Note: GDP = gross domestic product; IMF = International Monetary Fund.
Sources: Author's calculations; IMF, World Economic Outlook (October 2020).

Figure 12.5 Pakistan: foreign debt and contributing factors

Note: GDP = gross domestic product; IMF = International Monetary Fund.

Sources: Author's calculations; IMF, World Economic Outlook (October 2020).

Figure 12.6 Sri Lanka: foreign debt and contributing factors

Table 12.3 Foreign debt in Pakistan and Sri Lanka, 2000–2019 (percentage point of GDP, annual average)

	Pakistan		Sri Lanka	
	Actual	Market	Actual	Market
Change in debt ratio	−0.4	−1.2	0.5	0.3
Interest–growth differential	−0.1	−0.4	−1.9	−1.9
Primary current account	0.1	−0.5	2.1	2.0
Non-debt creating inflows	−0.5	−0.5	−0.4	−0.4
Residual	0.2	0.2	0.7	0.7
Change in stock of debt 2000–2019 (% of GDP)	−8.0	−25.0	10.0	6.6

Note: GDP = gross domestic product, SOE = state-owned enterprise.

Sources: Author's calculations and IMF, World Economic Outlook (October 2020).

For Pakistan, the interest–growth differential has been an important driver. In 2000–2001 and in 2018–2019, it pushed debt higher, as sharp currency depreciations in those years and some increase in borrowing cost later as the government's commercial borrowing increased outweighed the impact of growth and inflation.⁷ For other years, this factor is either reducing debt, or is relatively small, mostly reflecting the comparatively low rate of depreciation or even some appreciation in these years. For Sri Lanka, this factor is mostly working to reduce debt ratios, reflecting a more stable exchange rate as well as lower foreign interest rates and higher growth.

Large primary current account surpluses contributed to a sizable downward pressure on foreign debt in Pakistan during 2000–2004, but large deficits pushed up debt during 2006–2009 and again in 2018, while during the remaining years the primary current account surplus or deficit had only a modest impact on the debt ratio. In Sri Lanka, the average primary current account deficit for the period (2 percent of GDP) far exceeded Pakistan's average deficit (0.1 percent) and in virtually all years contributed noticeably to an increase in debt.

Non-debt creating financing flows were of limited importance in both countries, largely reflecting relatively low FDI flows. During 2006–2009, however, such flows were reducing debt in Pakistan, reflecting a short-lived surge in FDI during these years, and for Sri Lanka pushed up debt in 2009–2010 as the country rebuilt its gross reserves.

For both countries in many years there are again large residuals, indicating that factors other than the ones discussed have often strongly impacted foreign debt levels. For example, the central bank may have built gross reserves by buying foreign exchange from commercial banks or the public ("dollars under the mattress"). Such a change in reserves does not reflect any non-debt creating financing flows in the balance of payments. This has been the case in the early 2000s in Pakistan, where prior to 2002 a parallel foreign exchange market existed in which the public held sizable foreign exchange deposits and cash. However, no published data seem available to gauge the extent of such transactions. Other factors in the residual may reflect foreign borrowing by commercial banks, in order to build up their foreign exchange reserves.

Overall, then, the main drivers of the public debt ratio were on average quite similar between the two countries: in each, depreciation was the most important factor driving up debt, followed by the primary deficit. And in both, a favorable interest–growth differential provided a strong counterpoint. Regarding foreign debt, the current account deficit in Pakistan was too low to drive up debt substantially, while in Sri Lanka a much larger deficit was the main factor driving debt upward. Again, in both countries a favorable interest–growth differential, and also relatively large non-debt creating financing, provided strong downward pressure.

3. ENERGY POLICY IN PAKISTAN

3.1 Institutional Framework

Pakistan since the 1960s has pursued *de facto* a policy of providing electricity as a right, that is largely separated from the ability and willingness to pay, which required a large role of the public sector in providing energy. Between 1958 and 1994, production and distribution of electricity was entirely the domain of two vertically integrated public enterprises: the Karachi Electric Supply Company (KESC) in the Karachi region, and the Water and Power Development Authority (WAPDA) in the rest of the country. Beginning in 1994, private investors were authorized to build and operate power stations (independent power producers (IPPs)); WAPDA guaranteed to buy all their output at prices set at levels based on fuel cost, operating charges, and a guaranteed return on capital in power purchase agreements. In recent years, IPPs have produced about 43 percent of all electricity, public sector power generation companies (government energy companies (GENCOs)) about 35 percent, and the remainder came mostly as hydropower from WAPDA. Starting in 1998–1999, WAPDA was gradually dismantled: its distribution network was carved into several regional distribution companies

(DISCOs), and the GENCOs became part of a holding company (PEPCO) managed by the Ministry of Power.⁸ Despite longstanding plans to privatize the DISCOs, only the Karachi company (KESCO) was privatized in 2005 (sold to a United Arab Emirates investor). Similarly, only one GENCO has to date been (partially) privatized. Purchase of power and transmission between the producers and the load points for the DISCOs was first vested into the National Transmission and Dispatch Company, but since 2015 the Central Power Purchasing Agency (CPPA) was carved out of the National Transmission and Dispatch Company and set up as the sole buyer. It purchases all power produced from the IPPs, GENCOs, and WAPDA hydel and sells it to the DISCOs in proportion of some historical peak demand—that is, unrelated to whether DISCOs pay for the power they receive. The prevailing power purchase agreements with all thermal power generators link payments to capacity (take or pay), whether or not the power is actually used (Independent Evaluation Department 2019). In 1997, a national regulator was set up (National Electric Power Regulatory Authority (NEPRA)) to issue licenses to operators in the sector, monitor compliance with these licenses, and determine the end-user tariffs DISCOs could charge. It determines tariffs annually, on the basis of:

1. production cost of generation companies, including guaranteed return on equity (for IPPs) and finance charges;
2. cost of fuel or other energy input (some hydropower, some coal-fired, but mostly imported fuel);
3. operating cost and distribution margins of DISCOs, assuming 100 percent bill collection and “standard” transmission losses (15.5 percent in recent years); and
4. government budgetary subsidies to low-end consumers to allow poorer households access at lower rates.

However, the tariffs thus determined take effect only after notification by the government. In many years, substantial delays (for example, nine months in 2012) occurred in notifying the tariffs determined by NEPRA. A recent Asian Development Bank (ADB) report (Independent Evaluation Department 2019, Figure 10) shows furthermore that tariffs notified by the government tend to be below NEPRA’s determination for at least in 2009–2016. Partly this indicates that NEPRA’s tariff determination can be challenged in court, but mostly it reflects political concerns—tariff increases are politically quite sensitive.

3.2 Energy Sector Performance

In recent decades, installed capacity has increased steadily (from less than 10 gigawatts in 1991 to nearly 30 gigawatts in 2017) (Bacon 2019), but access to electricity seems to have barely kept pace with high population growth, and the share of all households having access remained at around 70 percent between (Figure 12.7). Overall transmission and distribution (T&D) losses have been declining but remain high (Figure 12.8), well above the levels assumed by NEPRA. Similarly, collection falls far short (IMF 2019a, Annex I) of the 100 percent assumed by NEPRA in determining the tariffs. This reflects a highly uneven level of efficiency among the various DISCOs, with very poor performance of DISCOs operating in remote areas where law and order remain weakly enforced. For example, in 2019 the Balochistan DISCO (QUESCO) collected only about 30 percent of bills issued, with many customers continuing to receive service even when more than two years in arrears; and the

Peshawar DISCO (PESCO) had T&D losses of 40 percent. In addition, the government has been frequently unable to provide the budgeted subsidies to compensate DISCOS for the preferential tariffs to low-end consumers.

Source: World Bank, World Development Indicators.

Figure 12.7 Access to electricity (% of population)

Source: World Bank, World Development Indicators.

Figure 12.8 Electric power transmission and distribution losses (% of output)

As a result, DISCOs have been unable to collect the tariff revenue assumed in NEPRA's calculations, and hence could not pay CPPA the full amount of electricity purchased. This shortfall ("circular debt") in turn has led to inadequate payments to the power producers, with the following consequences:

1. Power producers ran up arrears to the fuel suppliers, especially the dominant public oil import company (Pakistan State Oil), which in 2014 was thereby weakened financially to the point it was denied letters of credit for fuel import—as well as tax arrears to the government.
2. Producers cut production, resulting in regular power outages/blackouts, with adverse consequences on growth. As recently as 2017, outages averaged five hours a day in urban areas and 10 hours in rural areas; in earlier years, the situation appears to have been even worse.
3. Investment in maintenance, let alone in new capacity remained low, especially for GENCOs.

To prevent the system from collapsing, every few years the government settled (some) of these arrears. In 2009, it created a holding company (Power Holding Private Limited (PHPL)) which borrows from banks, with government guarantee (typically at the Karachi interbank offered rate (KIBOR)+2 percent with 5–7 years maturity), to pay off some of the circular debt. These cash injections effectively replace DISCO liabilities to CPPA with liabilities to PHPL (but do not change the amount of circular debt). DISCOs are supposed to service these loans, an additional cost that NEPRA factors into consumer tariffs. The cash injections allow CPPA to pay off some of its arrears to power producers. The remaining arrears to the generators carry a late payment charge of KIBOR+4 percent. Given the financial situation of the DISCOs, these various finance charges are feeding back into an acceleration of circular debt accumulation. Thus, the stock of circular debt has been rising steadily throughout the period under consideration. While there does not appear to be a continuous data series since 2000, a joint United States Agency for International Development/Planning Commission of Pakistan study provided estimates for 2006–2012 (Bacon 2019) and a recent IMF report estimates for 2013–2019 (IMF 2019a, Annex I). According to these estimates, the stock of circular debt rose steadily (and quite rapidly in the last two years) from around PRs84 billion (1.2 percent of GDP) at the end of 2005 to PRs1,600 billion (4.2 percent of GDP) at the end of FY2019. Since 2013 this stock is held in roughly equal part as debt to PHPL (i.e., government-guaranteed debt) and arrears owed by CPPA to its suppliers.

In recent years, Pakistan has also published data on the liabilities of SOEs.⁹ The data indicate that between 2013 and 2017 total gross liabilities of energy sector SOEs rose from 13 percent to 16 percent of GDP; of course, much of these liabilities are cross-liabilities between SOEs in the sector.

4. ENERGY SECTOR DEVELOPMENTS IN SRI LANKA, 2000–2019

4.1 Energy Policy and Institutional Framework

Similar to Pakistan, Sri Lanka has pursued a policy of providing electricity as a right, within a similar framework of institutions and policies. As part of the "socialist" approach pursued in the first decades after independence, all electricity generation and distribution were consolidated in the government-owned Ceylon Electricity Board (CEB).¹⁰ To attract foreign invest-

ment, private investors have been allowed since 1996 to generate power (IPPs), but had to sell it to CEB, which to this day has remained the sole buyer, under purchase agreements similar to the ones described for Pakistan. In 2017, CEB produced about 70 percent of all electricity, with IPPs and some small producers (often owned by local government) accounting for the remainder. CEB holds the only transmission license and four out of five distribution licenses. The fifth license is held by Lanka Electricity Corporation, in which CEB and the Ministry of Finance hold a majority share. In 2002, the Parliament established the Public Utility Commission of Sri Lanka (PUCSL) to regulate the power, petroleum, and water services industries. However, only since 2009 was PUCSL effectively empowered to act as the technical, economic and safety regulator for the power sector; petroleum and water have yet to be brought under its purview. With PUCSL becoming effective, tariff-setting and the underlying cost assumption have become more transparent, although there seem to be no data published on the actual cost. Furthermore, in another parallel to Pakistan, there have been delays in notifying PUCSL-determined tariffs (World Bank Group 2019). The last tariff adjustment became effective in 2014; a further tariff adjustment was a condition under the recent IMF-supported adjustment program (2016–2020) but was not implemented. The existing tariffs are highly differentiated among the type of end users, with bulk and other commercial customers charged above (assumed) cost to cross-subsidize households (charged about two-thirds of the cost). Even so, the average tariff is below cost, that is, losses are built into the system as budgeted subsidies are insufficient to cover the difference.

Domestic energy sources are limited, with hydropower accounting for about one-third of installed capacity and other renewables for around 15 percent. Hydropower is, moreover, highly dependent on erratic rainfall (Sri Lanka is prone to both droughts and floods), and in 2017, for example, accounted for only 20 percent of electricity generation (World Bank Group 2019). Thus, power production remains dependent on imported inputs (mostly petroleum and coal). Since 1961, the government-owned Ceylon Petroleum Corporation (CPC) has had the monopoly for import, storage, transport and distribution of most petroleum products, and it also operates the only refinery in the country. Since 2003, some competition for retail distribution has been allowed through the Lanka Indian Oil Company. Sales prices are regulated, and for long periods CPC had to supply CEB at prices below cost. Only under the last IMF-supported program did CPC adopt a mechanism of regular price adjustments to reflect cost (since May 2018).

4.2 Energy Sector Performance

Electricity production has been rising steadily in recent decades, virtually quadrupling between 1997 and 2017, and since 2017 virtually all households have access to electricity (see Figure 12.7). As in Pakistan, T&D losses have been gradually declining but remain sizable (see Figure 12.8). However, power outage seems rare. Little information seems to be publicly available about collection rates. In any case, with average tariffs below cost and sizable T&D losses, CEB has incurred sizable deficits (0.3 percent of GDP in 2017, 0.2 percent in 2018) (IMF 2019b). These were financed in part by running up arrears to CPC, partly by bank credit from public banks, and partly by government support (for example, in 2013 the government assumed \$1 billion of CEB debt in return for equity, and furthermore assumed a large share of debt servicing to foreign investors (World Bank Group 2019, section 3). CEB's deficits of

course understate the underlying deficit arising from electricity as it has paid CPC below cost for many years. As a result, CPC has also often incurred large losses (0.7 percent of GDP in 2018 (IMF 2019b)), financed mainly by credit from public banks. As a result, the combined debt of CEB, CPC and Lanka Electricity Corporation that was guaranteed by the government reached nearly 4 percent of GDP in 2019.¹¹ Data on the total debt of energy sector SOEs do not seem to be publicly available.

5. THE IMPACT OF ENERGY POLICY AND DEBT IN PAKISTAN AND SRI LANKA

Energy policy has influenced public and foreign debt in many direct and indirect ways. By adding to macroeconomic imbalances, it has certainly contributed to higher interest rates and stronger currency depreciation, but quantification of these influences seems rather difficult. Here we focus instead on a few channels through which energy policy may have directly affected the other key factors driving the evolution of the debt ratios, as set out in section 2.

5.1 Energy Policy and Growth

As indicated before, household access to electricity may affect labor supply and hence growth by raising (notably female) labor participation. However, there is little evidence that energy policy had much impact on labor participation in Pakistan, where access to electricity has remained virtually stable since 1999 at 70 percent of households (see Figure 12.7), while overall labor force participation barely increased between 2008 and 2018 from 50.1 percent to 51.0 percent, and female participation from 20.0 percent to 21.9 percent.¹² For Sri Lanka, energy policy might indeed have contributed to raising labor supply. While access to electricity increased from about 80 percent of households in 2008 to virtually 100 percent in 2017 (see Figure 12.5), overall labor force participation rose during the same period from 48.7 percent to 54.0 percent (female participation from 32.8 percent to 36.8 percent).¹³ However, labor supply will be affected by many factors other than electricity, and a recent World Bank study argues that female participation in Sri Lanka is in fact mostly determined by legal and social factors (World Bank Group 2015).

The impact of energy policy on growth through other channels is even more difficult to pin down. Clearly energy, and electricity in particular, is an important input especially into industrial production but also services. However, in Sri Lanka the growth of manufacturing in the last two decades has been quite anemic and its share in GDP on a declining trend.¹⁴ In Pakistan, the manufacturing sector's share in GDP rose during 2000–2008, but has been stagnating since.¹⁵ In both countries, the relatively high price of electricity for commercial customers (to cross-subsidize households) may have played a role. In Pakistan, there is furthermore evidence that frequent blackouts have negatively affected growth. The IMF in 2013 estimated that load shedding during 2000–2010 had cost around 10 percent of GDP (IMF 2013, Box 7). In the same year, a World Bank study (Lopez-Calix and Touqeer 2013) listed deficient energy infrastructure among the most critical growth constraints, corroborated by the World Economic Forum's regular surveys of business executives, which in 2014 ranked deficient infrastructure as the top concern in 2014–2015 (World Economic Forum 2015). Similarly, the 2013 World Bank Enterprise Survey found that 75 percent of firms in Pakistan

identified electricity as a major constraint, compared with a South Asia average of 46 percent. A more recent World Bank micro-data study (Grainger and Zhang 2017), using a large sample of manufacturing firms, found that a 10 percent increase in the duration of outage on average led to 0.4 percent decrease in value added. Assuming the sample is representative for the whole sector, the doubling of outage time between 2008 and 2013 (from around 13 percent to 26 percent of daytime) would have cost 4 percent of manufacturing GDP, or about 0.5 percent of total GDP. Similarly, the available data on sales losses due to outage (see Table 12.1) point to a sizable negative impact on growth.

5.2 Energy Policy and the Primary Fiscal Balance

Energy policy will affect the fiscal accounts mostly through subsidies and tax expenditure. However, neither country publishes data on budgetary energy subsidies. Both publish data on current subsidies (Figures 12.9 and 12.10). It is likely that for Pakistan the bulk of these current subsidies is indeed made up by energy-related subsidies (the remainder seem mostly food subsidies).

Note: GDP = gross domestic product; IEA = International Energy Agency.
Sources: IEA, Energy subsidies: IEA subsidies database; Ministry of Finance, Pakistan Economic Survey, Statistical Supplement.

Figure 12.9 Pakistan: current subsidies and the IEA estimate for energy subsidies (% of GDP)

For example, an IMF report in 2013 (IMF 2013, Box 7 and para. 8) estimates energy subsidies at 1.75 percent of GDP 2012–2013, compared with 1.6 percent of GDP of recorded current subsidies in that year (in many years due to fiscal constraints subsidies delivered are paid only in the subsequent year, and the government incurs arrears to the DISCOs). Similarly, in

FY2018 and FY2019 energy subsidies accounted for more than three-quarters of total budgeted subsidies (Independent Evaluation Department 2019). More recently, reforms (mostly in the context of IMF-supported adjustment programs) have brought down energy subsidies, both through electricity tariff adjustments (Bacon 2019) and automatic fuel price adjustments, and this helped lower current subsidies to 0.5 percent of GDP in FY2018/19. For Sri Lanka, no published information on the composition of current subsidies seems available.

Note: GDP = gross domestic product; IEA = International Energy Agency.

Sources: IEA, Energy subsidies: IEA subsidies database; World Bank, World Development Indicators.

Figure 12.10 Sri Lanka: Current subsidies and the IEA estimate for energy subsidies (% of GDP)

While government-paid subsidies are the relevant item affecting fiscal balances and hence actual public debt, they miss part of the picture. As discussed above, a more comprehensive view would estimate subsidies as the difference between global market prices for energy products and the price paid by local consumers, as the IEA has done in estimating energy subsidies for 2010–2018¹⁶ (Figures 12.9 and 12.10, and Table 12.1). For Pakistan, these estimates at times substantially exceed the total current subsidies recorded in the fiscal accounts. In the main, this shows that Pakistan's sizable natural gas production is sold to domestic customers well below world market prices (but not necessarily below the cost of production). While no fiscal cost is recorded, this broader subsidy measure highlights the opportunity cost of this aspect of energy policy (in particular GDP and tax revenues would be higher if gas were sold at market prices). For Sri Lanka, which has no own energy sources (outside of hydropower, which is not included in the IEA statistics), the IEA estimates are well below the level of total current subsidies, indicating that apart from 2010–2012, energy subsidies were smaller than other subsidies, averaging around 0.5 percent of GDP in recent years.

5.3 Assumption of Energy Sector SOE Debt

No systematic data on the government's assuming SOE debt seem to exist for either country. Some of this may be recorded as net lending in the fiscal accounts (and as such part of the primary balance), some in the acquisition of financial assets (such as equity) "below" the line defining the fiscal balance. However, in some IMF and World Bank reports several major instances of such transactions are detailed and may give a flavor of the magnitudes involved.

For Sri Lanka, as discussed above, a major transaction involved the government's acquisition of equity in CEB in 2013 (for \$1 billion, or 1.3 percent of GDP). Similarly, in preparation for privatization, the Pakistan government settled KESC arrears in return for equity for 1.4 percent of GDP in FY2001/02 and again in FY2002/03 for 0.2 percent of GDP. Unrelated to energy, it also recapitalized some public banks in FY2003/04 for 0.5 percent of GDP, similarly adding to government debt. More recently, it "cleared" part of the "circular debt" (see section 4) in FY2011/12 (2.0 percent of GP), FY2012/13 (1.4 percent), FY2017/18 (0.4 percent) and FY2018/19 (0.5 percent), largely through PHPL paying off DISCO debt to energy suppliers, with PHPL in turn borrowing commercially from local banks, with government guarantee. To the extent the original DISCO debts were already guaranteed, such clearance would, of course, not add to public and publicly guaranteed debt. While no published data seem available on the clearance of already guaranteed debt, much of these debts were most likely owed to the public power generators, as the IPPs would have been unlikely to have continued to sell output without being paid; and as debt between SOEs, these liabilities would presumably not have been guaranteed.

5.4 The Overall Impact of Energy Policy on Public Debt in Pakistan and Sri Lanka

To summarize and quantify the various elements discussed above, we try to develop a "counterfactual" path of public debt under the hypothesis that during 2000–2019 both countries had pursued a market-based energy policy.

Regarding growth, we assume an unchanged path of nominal and real GDP for Sri Lanka. As discussed above, while the relatively high electricity prices charged to industry may have suppressed manufacturing growth, rising household access to electricity may have contributed to an increase in labor participation, but neither effect is easy to quantify. For Pakistan, given the evidence that widespread outages—related to the mispricing and other mismanagement in the energy sector—affected output, we assume that annual real GDP growth would have been higher by half a percentage point. This is more conservative than the IMF estimate of a loss of GDP of 10 percent during 2000–2010 alone (and outages continued well into FY2018/19) (NEPRA 2019), but somewhat more than estimated in the World Bank micro-study, which looked at only the manufacturing sector.¹⁷ In fact, the assumption is likely to be still conservative, as market-based gas pricing would have raised the value added from domestic gas production.

To determine the impact of energy policy on the primary balance, we assume that conservatively with market pricing the balance would have improved by the amount of energy subsidies actually budgeted (fiscal subsidies). For both countries this would again seem to be a conservative assumption, as under market-based pricing policies, energy enterprises would probably have paid more taxes and, in the case of Pakistan, the government might have received

substantial royalties from domestic energy production.¹⁸ As discussed, while neither country publishes fiscal energy subsidies, it seems reasonable for Sri Lanka to use the IEA energy subsidy estimates for 2010–2019, and assume for 2000–2009 (with no IEA estimates available) the average ratio between IEA estimates and current subsidies for 2010–2019. Based on the IMF estimates for certain years discussed above, for Pakistan we assume that fiscal subsidies accounted for three-quarters of current subsidies. Finally, we assume that the various bailouts/recapitalizations discussed above would not have been necessary. For the remainder of the various factors driving public debt, we retain the actual values as shown in Figures 12.3 and 12.4, including for the residuals. Again, this is conservative: the better financial health of energy SOEs under market-based policies would have contributed to greater macroeconomic stability and hence lower risk premia in interest rates and a stronger exchange rate (also because energy consumption and hence fuel imports might have been lower). Furthermore, both guaranteed and non-guaranteed energy SOE debt would certainly have been lower.

Regarding foreign debt, the better primary fiscal balance under the market scenario would have been likely to have contributed to some improvement in the primary current account balance—but less than the improvement in the primary balance because of some offsetting decrease in private saving (Ricardian equivalence). On average during 2000–2019, an increase (decrease) of the primary fiscal balance of 1 percentage point of GDP was associated with an improvement (deterioration) in the primary current account balance of 0.7 percentage points of GDP in Pakistan and 0.4 percentage points in Sri Lanka. On this basis, we assume in the counterfactual scenario a corresponding improvement in the primary current account. This may again be conservative since it ignores any substitution effect from relatively higher energy prices on the import of fuel, improving the current account even more.

Tables 12.2 and 12.3 compare the outcome between these two different energy policies. For Pakistan, the difference is dramatic: public debt would have been lower by about 25 percentage points of GDP had market-based energy policies been pursued during 2000–2019. In the main this reflects the sharp improvement in the primary fiscal balance, to a lesser extent higher growth and the absence of any assumption of energy SOE debt. Because of the lower debt path, additional secondary effects change somewhat the contributions of the other factors, notably weaker contributions from the interest–growth differential and depreciation. For Sri Lanka, public debt would have been lower by about 9 percentage points of GDP, virtually all because of the improvement of the primary balance through lower energy subsidies. Thus, the main difference in the outcomes for the two countries is that because fiscal energy subsidies were much more important in Pakistan compared with Sri Lanka (on average 0.9 percent of GDP compared with 0.5 percent during 2000–2019), the gains from adopting a market-based energy policy would have been much larger for Pakistan. It may be noteworthy, however, that since total current subsidies (including non-energy related) were on average higher in Sri Lanka than in Pakistan, elimination of all subsidies would therefore have resulted in an even bigger drop in public debt for Sri Lanka compared with Pakistan. On the other hand, if one were to assume that the full amount of the savings in energy subsidies as defined under the broader IEA concept would have benefited the primary balance, Pakistan's public debt would have been around 40 percentage points of GDP lower.¹⁹

Regarding foreign debt, the difference between the market and actual scenario essentially stems from the improved primary current account balance, which is from the improved fiscal balance dampened by some Ricardian offset. Since the improvement of the fiscal balance is

much larger and the average Ricardian offset much lower in Pakistan than in Sri Lanka, again the impact of market-based energy policies would be much more substantial for Pakistan (foreign debt would have been lower by 21 percentage points of GDP).

Of course, these results depend critically on the assumptions made. There is particular uncertainty in estimating the growth impact of energy outages in Pakistan, the level of energy subsidies in both countries (especially since IEA estimates are available only for the second half of the period), and (for the foreign debt path) the impact of a change in the primary fiscal balance on the primary current account. Furthermore, in both countries net lending to SOEs²⁰ will probably have gone at least partly to energy sector SOEs, equivalent to energy subsidies in its impact on the primary balance.

6. ENERGY POLICY AND PUBLIC DEBT IN OTHER COUNTRIES

Given that energy subsidies were an important factor in driving debt in Pakistan and to a lesser extent also in Sri Lanka, it seems plausible that subsidies played a comparable role in Bangladesh and Indonesia, which over the period considered had similar or even higher average levels of (IEA concept) energy subsidies (Table 12.1), and a still sizable role in India and Viet Nam. Similarly, substantial inefficiencies in energy sector firms (again predominantly state-owned in most cases) are indicated (at least during 2010–2014, later data seem not available) by T&D losses which in several of these countries were not far away from Pakistan, and were even worse in India (Table 12.1). It might be interesting to explore to what extent this led to the occasional need to recapitalize these SOEs or assume part of their debt, thus further contributing to public debt. In India, for example, the IEA reports (IEA 2020b) that under a reform program launched in 2015 (UDAY) state governments were authorized to issue bonds to finance the taking over of up to 75 percent of the debt owed by (mostly state-owned) DISCOs, provided certain governance reforms (metering, feeder segregation, some tariff increases) were implemented—quite similar to the treatment of “circular debt” in Pakistan and the bailout of CEB in Sri Lanka. Any growth impact from outages cannot be reliably inferred from the anecdotal data in Table 12.1. Still, a recent IEA report notes that outages in India were quite substantial through 2008 (but declined thereafter), and the erratic supply from the public system had given rise to a growing trend for industry to build their own dedicated power generator plants (IEA 2020b). On the other hand, household access in all these countries has been much higher than in Pakistan, suggesting the likelihood of positive growth effects (through labor participation). Finally, lower public debt levels in all these countries make it unlikely that energy policy much affected risk premia on interest rates or exchange rates.

7. POLICY OPTIONS

There are many ways to address public debt issues and ensure debt sustainability. The above analysis of the role of energy policy can help to clarify and quantify the cost and benefits of various policy options, and thus help policy makers constrained by limited political capital to choose the reform with the biggest “bang for the buck”. In Pakistan and in Sri Lanka the fiscal deficit has been a key factor in raising public debt. Indeed, in both countries, reforms supported by IMF programs over the last 20 years (and more) have prioritized revenue-based

fiscal consolidation as the key to debt sustainability, as in both countries fiscal revenue remains lower than comparator countries. However, increasing revenue will usually have some negative effects on incentives to work and produce (at least in the formal, taxed sector of the economy), and thus will trigger secondary effects, dampening growth and offsetting some of the revenue gains. By contrast, a reduction of energy subsidies with the same fiscal impact will usually have positive effects on the allocation of resources, and thus the secondary effects will reinforce the fiscal improvement (and have additional positive spillovers such as reducing pollution). To illustrate, an additional scenario (“fiscal reform”) assumes energy policy to remain unchanged from the actual one, but through revenue action the primary fiscal balance is improved by exactly as much as through the elimination of energy subsidies in the market scenario (Table 12.2, third columns for each country).

For Pakistan, revenue-based fiscal consolidation yields a far more modest improvement in public debt than energy sector reform, because such consolidation does not help growth (outages remain) and does not shut down the additions to public debt from inefficient energy enterprises. For Sri Lanka, the difference is virtually nil, since there are no negative growth effects from unreformed energy policy, and the assumption of SOE energy debt remains small.

Reducing energy subsidies is certainly not an easy option. The large share of households having access to electricity in most countries (Table 12.1) indicates that electricity price increases (and similarly increases of fuel prices at the pump) affect virtually the whole population, whereas income tax reform, for example, will usually affect only a relatively small number of households in the formal sector. Accordingly, political resistance will be strong. Nevertheless, the case for reducing energy subsidies has certainly not been lost on policy makers. The first columns in Table 12.1 indicate policy efforts across a range of countries, with a decline in subsidies as a share of GDP in 2010–2019 that cannot be explained solely by the decline in oil prices over the period (around 20 percent).²¹ This shows that reform is possible even in a difficult political environment, as the substantial decline in subsidies in Pakistan since about 2010 (Figure 12.9) demonstrates (mostly based on tariff adjustments, and of course much helped by the decline in global oil prices since 2015). In India, where subsidies were much lower to start with, reforms focused mostly on narrowing various energy subsidy schemes to the poorer segments of the population, bringing subsidies down to the same level as Pakistan by 2019. Indonesia has since 2014 attempted to reduce subsidies (from levels comparable to Pakistan) through a combination of price/tariff adjustments and the narrowing of eligibility; a recent Organisation for Economic Co-operation and Development peer review describes the political and institutional aspects of the reforms (OECD 2019). However, political pressures halted these reforms in 2018, and subsidies rose back to the former levels in 2018, before declining in 2019 due to falling oil prices. An interesting case of subsidy reform is Iran, which did not aim at improving the fiscal situation but aimed to reap the efficiency gains (that is the difference between the “market” and the “fiscal reform” scenarios illustrated above) (Guillaume et al. 2011). After a careful public information campaign to build support, domestic consumer prices for fuel were raised twentyfold in late 2010 (from levels that were a tiny fraction of world prices); and consumers were credited with lump-sum compensation through the banking system. However, domestic prices remained still well below world prices, and as the latter surged in 2011–2012, with little further adjustments, subsidies quickly rose again, and in 2019 exceeded the levels of 2010. Dramatic subsidy reduction succeeded in Thailand, Bangladesh and Viet Nam, whereas in Sri Lanka the small modest decline in subsi-

dies was largely due to lower fuel prices. Overall, most countries in Table 12.1 had achieved a level of subsidies by 2019 that should not have been a major driver of public debt (and at most contribute to debt at levels broadly comparable to the Sri Lankan experience discussed earlier). With oil prices even lower in 2020 and probably beyond due to the COVID-19 pandemic, this should hold also for the next few years.

Reform of energy subsidies, especially regarding electricity, will involve a combination of reducing cost and raising consumption prices. Reducing cost would require addressing the many governance and efficiency issues that characterize the mostly state-owned distributors (and often producers) in many of the countries in Table 12.1. However, in most countries subsidy reduction was mainly achieved through tariff adjustments, less through institutional reform of an energy sector that remains dominated by inefficient state enterprises and government interference (such as price controls). In other words, to some extent consumers have been asked to pay the cost of poor governance.

The experience of Pakistan as well as Sri Lanka is instructive for the difficulties in structural reforms of the SOEs involved. While the declining trend for transmission losses (at least through 2013) points to some efficiency improvements, virtually no progress has been achieved in privatizing SOEs in the energy sector. In the long run, sustainable energy policy will require tackling deeper reforms, such as privatizing energy production and distribution, and allowing prices to be automatically market-determined.

8. OUTLOOK

The economic fallout from the COVID-pandemic has dramatically altered the outlook for debt sustainability in Pakistan and Sri Lanka. Growth in 2020 will turn negative, because exports will suffer from weaker global demand (tourist arrivals in Sri Lanka virtually collapsed in April 2020), and domestic demand and production will be affected by the various lockdown measures during the spring of 2020. According to the October 2020 IMF World Economic Outlook, Pakistan is expected to be affected less than Sri Lanka. The real economy will suffer some negative growth of -0.4 percent in FY2020 and a modest recovery in FY2021 ($+1$ percent), while the overall fiscal deficit is expected to remain at around 8 percent of GDP in FY2020 before falling to 7 percent in 2021. For Sri Lanka, however, growth would fall sharply by 5 percent in 2020 and rebound by $+5$ percent in 2021, while the fiscal deficit would continue to rise, to about 8 percent of GDP in 2020 and 10 percent in 2021.

Regarding the external account, imports will shrink; and despite the expected decline in exports, the current account balances are projected to improve in Pakistan but deteriorate slightly in Sri Lanka. Since worker remittances in both countries are an important source of foreign exchange inflows, there is considerable uncertainty as to how severely these are affected—in particular the remittances from the Gulf countries where lower oil prices may force some belt-tightening.

For Pakistan, the outlook will also be substantially affected by the ongoing implementation of a range of energy sector projects, many in the context of the China–Pakistan Economic Corridor (CPEC), which is part of the Belt and Road Initiative. CPEC projects in the energy sector involve power generation and transmission, financed by FDI or commercial borrowing from Chinese financial institutions, by Chinese investors or foreign-owned joint ventures. Most have been or will shortly be completed and may largely eliminate the rationing of

demand through outages. However, over the medium term, these projects will result in substantial additional balance of payments outflows (loan repayment, repatriation of profits, and higher fuel imports), estimated by the IMF to rise gradually to around \$4 billion per year after FY2025 (IMF 2017). Already in April 2020, Pakistan asked the PRC to renegotiate the terms of these payments. Furthermore, as long as poor governance and low efficiency in the transmission and distribution sector prevail, losses may rise with rising energy supply. Unless the country addresses these structural issues, increased electricity production and consumption will exacerbate the cost of the existing distortion, accelerating the accumulation of circular debt and thus, as discussed above, eventually public debt.

Under recent IMF projections for Pakistan, public debt would remain at around 90 percent of GDP for 2020–2021, while total foreign debt would also rise to levels not seen since the early 2000s, well above 40 percent of GDP in both years (IMF 2020a and IMF 2020b). For Sri Lanka, the October World Economic Outlook projections expect public debt to exceed 100 percent of GDP for 2020–2021, levels not seen since during the last two decades. Debts could even rise higher if governments would have to bail out SOEs—given the impact of the COVID-19 pandemic on global travel the two state-owned airlines may be particularly vulnerable.

Neither Pakistan nor Sri Lanka has the fiscal space to address the economic fallout from the pandemic through countercyclical fiscal policy (see Chapter 10, this volume). Thus, the challenging outlook clearly gives added importance to deepening energy policy reform now—using the opportunity of low global energy prices to move to automatic market-based pricing mechanisms (indeed Pakistan is planning to apply NEPRA’s tariff determinations automatically) to improve efficiency and support public finances, and over the longer run tackle the structural issues of SOE reform in the energy sector.

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent. The author thanks B. Ferrarini, M. Guigale, and J. Pradelli as well as Mueen Afzal for helpful comments and suggestions, and I. Vilkelyte for excellent research assistance.
2. Transmission and dispatch (T&D) losses in lower (higher) middle income are nearly three times (1.5 times) as high than in high-income countries, despite access to basically the same technology. See Burgess et al. (2020, p. 153).
3. The fiscal year (FY) of the Government of Pakistan ends on 30 June. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2016 ends on 30 June 2016.
4. For example, Escolano (2010).
5. Assuming that the interest rate on the foreign-denominated part of public debt equals the average interest rate on total foreign debt. In both countries the share of foreign debt owed by the private sector is relatively small and the bulk of foreign debt is public and publicly guaranteed (about 80 percent for Pakistan in 2019, and 64 percent for Sri Lanka in 2018; see State Bank of Pakistan (2020) and IMF (2019b).
6. The regular public- and foreign debt sustainability exercise in the IMF Article IV staff reports similarly finds in many years large residuals not explained by the primary balance, interest/growth factors, and exchange rate movements.
7. Between FY2010 and FY2019 the share of commercial debt in external debt doubled from 16 percent to 33 percent; see State Bank of Pakistan (2020).
8. WAPDA remains in charge of water management and hydroelectric power generation.

9. Government of Pakistan, Finance Division. (2020a) State-Owned Enterprises Annual Reports, 2013–2017 Islamabad. Finance.gov.pk.
10. For an overview of the history of energy policy in Sri Lanka, see ADB (2019).
11. Government guarantees for SOE debt are capped at 7 percent of GDP under the Fiscal Management Responsibility Act.
12. ILO (2020a). Earlier data are not available.
13. ILO (2020b). Earlier data are not available.
14. Government of Sri Lanka (2020). Department of Census and Statistics. National Accounts. <http://www.statistics.gov.lk>.
15. Government of Pakistan (2020b) Pakistan Bureau of Statistics. National Accounts Tables. pbs.gov.pk.
16. International Energy Agency (IEA 2020a). Energy Subsidies: Tracking the Impact of Fossil-Fuel Subsidies. <https://www.iea.org/topics/energy-subsidies>.
17. IMF (2013). However, the underlying research has not been published.
18. Most dramatically so in Pakistan's gas sector. As Figure 12.9 indicates, additional taxes might have been in the order of 2–3 percent of GDP in certain years.
19. Assuming energy subsidies under the IEA concept for 2000–2010 (where IEA data are not available) to be a constant share of current subsidies, with the constant the average of this share during 2010–2019.
20. For most years, net lending to SOEs in Pakistan was, however, quite modest; for Sri Lanka, no data on net lending seem to be published (budgetary statistics lump net lending with capital expenditure).
21. The fact that coal and natural gas prices often move differently from oil prices would not much alter this conclusion; of course, the share of subsidies is also affected by factors that reflect neither global energy prices nor policy action, such as real growth exceeding the growth in energy demand.

REFERENCES

- Asian Development Bank (ADB). 2019. *Sri Lanka: Energy Sector Assessment, Strategy, and Road Map*. Manila.
- Bacon, R. 2019. Learning from Power Sector Reform: The Case of Pakistan. *Policy Research Working Paper*. No. 8842. Washington, DC: World Bank.
- Burgess, R., M. Greenstone, N. Ryan and A. Sudarshan. 2020. The Consequences of Treating Electricity as a Right. *Journal of Economic Perspectives*. 34(10), pp. 145–69.
- Dinkelman, T. 2011. The Effects of Rural Electrification on Employment: New Evidence from South Africa. *American Economic Review*. 101(7), pp. 3078–108.
- Escolano, J. 2010. A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates. *Technical Notes and Manuals*. No. 2010/02. Washington, DC: International Monetary Fund (IMF).
- Government of Pakistan, Finance Division. 2020a. State Owned Enterprises Annual Reports 2013–2017. Finance.gov.pk.
- Government of Pakistan, Finance Division. 2020b. Pakistan Bureau of Statistics. 2020. National Accounts Tables. pbs.gov.pk.
- Government of Sri Lanka. 2020. Department of Census and Statistics. National Accounts. <http://www.statistics.gov.lk>.
- Grainger, C.A. and F. Zhang. 2017. The Impact of Electricity Shortages on Firm Productivity: Evidence from Pakistan. *Policy Research Working Paper*. No. 8130. Washington, DC: World Bank.
- Guillaume, D., R. Zytok and M.R. Farzin. 2011. Iran—The Chronicles of the Subsidy Reform. *IMF Working Paper*. 11/167. Accessed at: <https://www.imf.org/external/pubs/ft/wp/2011/wp11167.pdf>.
- Independent Evaluation Department. 2019. *Sector Assistance Program Evaluation: The Asian Development Bank's Support for the Power Sector in Pakistan 2005–2019*. Manila: ADB.
- International Energy Agency (IEA). 2018. *World Energy Outlook 2018*. Paris.
- International Energy Agency (IEA). 2020a. Energy Subsidies: IEA subsidies database.
- International Energy Agency (IEA). 2020b. *India 2020: Energy Policy Review*. Paris. Accessed at: https://niti.gov.in/sites/default/files/2020-01/IEA-India%202020-In-depth-EnergyPolicy_0.pdf

- International Monetary Fund (IMF). 2013. Pakistan: 2013 Article IV Consultation and Request for an Extended Arrangement under the Extended Fund Facility. Country Report No. 13/287. Washington, DC.
- International Monetary Fund (IMF). 2017. Pakistan: 2017 Article IV Consultation – Press Release; Staff Report; Informational Annex; and Statement by the Executive Director for Pakistan. Country Report No. 17/212. Washington, DC.
- International Monetary Fund (IMF). 2019a. Pakistan: First Review under the Extended Arrangement under the Extended Fund Facility and Request for Modification of Performance Criteria – Press Release; Staff Report; and Statement by the Executive Director for Pakistan. Country Report No. 19/380. Washington, DC.
- International Monetary Fund (IMF). 2019b. Sri Lanka: Sixth Review Under the Extended Arrangement Under the Extended Fund Facility and Requests for Waiver of Nonobservance and Modification of Performance Criterion – Press Release; Staff Report; and Statement by the Executive Director for Sri Lanka. Country Report No. 19/335. Washington, DC.
- International Monetary Fund (IMF). 2020a. Pakistan: Request for Purchase under the Rapid Financing Instrument – Press Release; Staff Report; and Statement by the Executive Director for Pakistan. Country Report No. 20/114. Washington, DC.
- International Monetary Fund (IMF). 2020b. *World Economic Outlook, October 2020: A Long and Difficult Ascent*. Washington, DC.
- International Labour Organization (ILO). 2020a. Pakistan Country Profile.
- International Labour Organization (ILO). 2020b. Sri Lanka Country Profile.
- Lee, K., E. Miguel and C. Wolfram. 2020. Does Household Electrification Supercharge Economic Development? *Journal of Economic Perspectives*. 34(10), p. 141.
- Lopez-Calix, J. and I. Touqeer. 2013. Revisiting the Constraints on Pakistan's Growth. *World Bank Policy Paper Series on Pakistan*. PK 20/12. Washington, DC: World Bank.
- National Electric Power Regulatory Authority (NEPRA). 2019. State of Industry Report 2019. Islamabad. Nepa.org.pk.
- Organisation for Economic Co-operation and Development (OECD). 2019. Indonesia's Effort to Phase Out and Rationalize its Fossil-Fuel Subsidies. A Report on the G20 Peer-Review of Inefficient Fossil-Fuel Subsidies that Encourage Wasteful Consumption in Indonesia. Accessed at: https://www.oecd.org/fossil-fuels/publication/G20%20peer%20review%20Indonesia_Final-v2.pdf.
- State Bank of Pakistan. 2020. Economic Data, Pakistan's Debt Profile. SBP.org.pk.
- World Bank Group. 2015. *Sri Lanka: Ending Poverty and Promoting Shared Prosperity – A Systematic Country Diagnostic*. Washington, DC: World Bank.
- World Bank Group. 2019. World Bank and International Finance Corporation: Sri Lanka Energy Infrastructure Sector Assessment Program: Final Report. Washington, DC.
- World Economic Forum. 2015. *The Global Competitiveness Report, 2015–2016*. Geneva.