

Article

The Fiscal and Monetary History of Bangladesh: 1971-2020

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Abstract

Since independence, Bangladesh has rapidly traversed from being a developing country with a weak fiscal system and a poorly functioning economy, to become a middle-income country with a rapidly growing and vibrant economy. This paper identifies reasons behind this transformation that are related to the management of fiscal resources along an inter-temporal budget constraint. For that purpose, it divides the fiscal and monetary history of Bangladesh since independence into three successive government regimes: (1) Sheikh Mujibur Rahman and Ziaur Rahman, 1971-1982, (2) Hussain Muhammad Ershad, 1983-1995, and (3) the current era, 1996-2019. Scrutiny of each item in the government budget constraint during each period shows that the earlier regimes relied more on seigniorage and were more burdened by the obligation to service foreign debt compared to the current regime.

Key words: Government Budget Constraint, Sargent Model, Fiscal and Monetary Policy.

JEL Classification Code: E52 (Monetary Policy), E62 (Fiscal Policy), H62 (Deficit · Surplus)

1. Introduction

An inter-temporal budget constraint for the government, proposed by Blanchard (1990), is the basic premise on which the analysis of fiscal sustainability rests. The constraint presumes that all government spending must eventually be funded by tax revenue. By accumulating government debt, taxes can be postponed only, not deferred. Two previous papers (Begun and Flath, 2020a, 2020b) defined various possible future tax trajectories consistent with the Bangladesh government budget constraint and calculated the present value of their accompanying excess tax burdens. This paper casts an eye backwards in time to describe how successive government regimes in Bangladesh traversed along the

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inter-temporal government budget constraint and with what consequences.

The content of this paper is the same sort of exercise recently applied to countries in Latin America by a team of economists organized by the Becker-Friedman Institute of the University of Chicago in 2013. In a soon-to-be-published collection of papers (Kehoe and Nicolini, eds, 2021) the economists show that fiscal crises in Latin American countries were preceded by imprudent fiscal and monetary policies; the crises were, in essence, a movement along the inter-temporal government budget constraint. The aim here is to apply the same scrutiny to Bangladesh.

This paper divides the fiscal and monetary history of Bangladesh since independence into three successive government regimes: (1) 1971–1982, Sheikh Mujibur Rahman and Ziaur Rahman, (2) 1983–1995, Hussain Muhammad Ershad, and (3) 1996–2019, the current era. In the first regime, the average growth rate in per-capita GDP was negative, in the second moderate, and in the third, rapid. The main claim of this paper is that imprudent monetary and fiscal policies in the earlier regimes account for some of the difference in outcomes compared with the current era. Here I consider monetary policy as well as fiscal policy. Begun and Flath (2020a, 2020b) did not consider monetary policy; the future projections of those two exercises were all premised on moderate inflation. But looking to the past, inflation rates in Bangladesh after independence were high and so a full accounting of tax revenue from that era needs to encompass seigniorage revenue too. This is the same logic underlying the “unfortunate monetary arithmetic” noted by Sargent and Wallace (1981) — tight monetary policy, by reducing seigniorage revenue, adds to future fiscal burdens, which might be addressed by higher inflation rates. A permanent reduction in inflation cannot be attained with monetary policy alone; it requires fiscal adjustment.

In Bangladesh, the successive government regimes adopted different fiscal measures, partly out of necessity, partly out of imprudence or myopia. The first regime after independence drew revenue from inflation of the currency and from government enterprises which it protected from foreign and domestic competition. It diverted the government fiscal resources to socially unproductive uses. The first regime came to a violent end—each of the two leaders (Mujib and Zia) falling before assassins, one after the other. The following regime — called a military dictatorship by many — lowered the inflation rate, sought foreign loans, relaxed constraints on domestic and foreign investment, and increased government spending on socially productive uses. The third regime has reduced reliance on foreign loans while keeping taxes low. Since independence, Bangladesh has rapidly traversed from being a developing country with a weak fiscal system and a poorly functioning economy, to become a middle-income country with a rapidly growing and vibrant economy. Our aim here is to identify reasons behind this transformation that are related to the management of fiscal resources along an inter-temporal budget constraint.

2. Intertemporal budget constraint

In describing the monetary and fiscal policies of the successive government regimes in Bangladesh, I will follow the example of the contributors to Kehoe and Nicolini (2021), by grouping the data into terms that make up the government inter-temporal budget constraint. To do this, it is necessary to modify the government budget constraint used in Begun and Flath (2020a, 2020b). These changes are to accommodate seigniorage as an additional source of government revenue and exchange rate movements as a cause of changes in the value of outstanding government debt denominated in foreign currency. I will also allow for the possibility of year-to-year changes in interest rates and in the price level. The modified government constraint is shown below the one from the earlier papers.

Begun and Flath (2020a, 2020b):

$$[1] \quad G_t - T_t + i_{t-1}D_{t-1} = D_t - D_{t-1}$$

Modified:

$$[2] \quad P_t(G_t - T_t + \omega_t) + i_{t-1}D_{t-1} + E_t i_{t-1}^* D_{t-1}^* = D_t - D_{t-1} + E_t(D_t^* - D_{t-1}^*) + M_t - M_{t-1},$$

where P_t is the price level (GDP deflator), G_t stands for officially-reported nominal government expenditure excluding interest payments, T_t is officially-reported nominal government revenue, and ω_t is an adjustment factor representing unobserved and unreported nominal government net expenditure; D_t and D_t^* are nominal and dollar-denominated total debt in that order, and i_t and i_t^* are their respective real interest rates; E_t is the foreign exchange rate; and M_t is the stock of base money. The modified budget constraint indicates that the real primary deficit plus interest payments on the debt denominated in domestic currency and denominated in foreign currency equals the increase in outstanding debt of both kinds plus the increase in the stock of base money (seigniorage).

Expressing the modified budget constraint Eq. [2] in terms of nominal GDP ($=P_t y_t$) and grouping terms yields

$$[3] \quad (\theta_t - \theta_{t-1}) + \xi_t(\theta_t^* - \theta_{t-1}^*) + \left(m_t - \frac{m_{t-1}}{g_t \pi_t} \right) \\ = \theta_{t-1} \left(\frac{1 + i_{t-1}}{g_{t-1} \pi_{t-1}} - 1 \right) + \xi_t \theta_{t-1}^* \left(\frac{1 + i_{t-1}^*}{g_t \pi_{t-1}^W} - 1 \right) + d_t + z_t,$$

where $\theta_t = D_t / P_t y_t$, $m_t = M_t / P_t y_t$, $\pi_t = P_t / P_{t-1}$, P_t^W is the foreign price level and $\pi_t^W = P_t^W / P_{t-1}^W$ is the foreign inflation factor, $g_t = y_t / y_{t-1}$ is the real GDP growth factor, $d_t = (G_t - T_t) / P_t y_t$,

Table 1. Government budget constraint

Sources of government funding in year t , percent of GDP

Domestic debt	Foreign debt	Seigniorage	
		Money issuing	Passive response to nominal growth
$(\theta_t - \theta_{t-1})$	$\xi_t(\theta_t^* - \theta_{t-1}^*)$	$(m_t - m_{t-1})$	$m_{t-1} \left(1 - \frac{1}{g_t \pi_t}\right)$

Government obligations in year t , percent of GDP

Domestic debt servicing	Foreign debt servicing	Primary deficit	
		Officially reported	Unreported adj. factor
$\theta_{t-1} \left(\frac{1+i_{t-1}}{g_{t-1}\pi_{t-1}} - 1\right)$	$\xi_t \theta_{t-1}^* \left(\frac{1+i_{t-1}^*}{g_t \pi_{t-1}^*} - 1\right)$	d_t	z_t

$z_t = \omega_t / P_t y_t$, $\xi_t = E_t P_t^W / P_t$ is the real exchange rate, and $\theta_t^* = (D_t^* / P_t^W) / y_t$. All the terms are expressed as percentages of GDP.

As shown below, the terms on the right-hand side of Eq. [3] denote the government's obligations in period t . The first two terms represent servicing payments on the two types of debt, while the last two terms equal the government primary deficit including unreported items that we will infer as a residual balancing term after all else is accounted for. The terms on the left-hand side include the sources to finance those obligations. The first two terms represent the changes in the debt-to-GDP ratios of the two types of debt, and the third term represents seigniorage. The seigniorage term can be further broken down into change in the nominal stock of base money relative to GDP ($= m_t - m_{t-1}$) plus a residual term ($= m_{t-1} \left(1 - \frac{1}{g_t \pi_t}\right)$) that represents the seigniorage relative to GDP that arises from expansion in nominal GDP. Breaking down seigniorage revenue flow in this way separates the active monetary expansion in each year from the "passive seigniorage" that results from simply meeting the increasing demand for real balances as the economy grows.

Table 1 groups the terms in Eq. [3] under each heading as just elaborated.

The budget constraint indicates that total government funding in each year must equal total government obligations. Primary deficits must be covered either by domestic or foreign borrowing, or by seigniorage. Persistent reliance on seigniorage will lead to inflation. The simplest way to represent the link between seigniorage and inflation is a variant of the quantity theory of money in which demand for money balances relative to GDP is inversely related to the expected rate of inflation (assumed equal to the actual inflation), the real rate of interest is constant, and the money multiplier is constant.¹⁾ In this setting, expansion of the monetary base is followed by a proportionate increase in nominal GDP.

My aim here is to use the government budget accounting framework as just described, to understand how monetary and fiscal policy has changed with each successive government regime in Bangladesh from its independence in 1971 up to 2019, the latest year for which data is available. A further point of this exercise is to see whether increases in government obligations were followed by economic crises of one sort or another. In the Latin American countries studied by contributors to Kehoe and Nicolini, eds, (2021), political regimes that financed expansions of government spending by inflating their currencies or accumulating foreign debt were often paving the way for later defaults on sovereign debt, hyperinflation, and contractions in output. I want to cast the same scrutiny on Bangladesh. The first step is to identify the successive government regimes for conducting this exercise.

3. Three successive government regimes in Bangladesh

The analysis in this paper divides the political history of Bangladesh into three episodes, in roughly the same way as did Hassan and Raihan (2017) in the book “Deals and Development: The Political Dynamics of Growth Episodes” edited by Pritchett et al. (2017). The initial regime encompasses the period 1971-1982, from independence through the administrations of Sheikh Mujibur Rahman and Ziaur Rahman. The second regime spans the era of control by Hussain Muhammad Ershad, who began as a dictator, but evolved to become the leader of a dominant political party, and ultimately ceded power through parliamentary election, 1983-1995. And the third regime, 1996-2019, is the current era of parliamentary democracy, albeit fragile democracy.

The first two episodes can be broken down further. The first episode, 1971-1982, the regime of ‘Sheikh Mujibur Rahman,’ 1971-1974, can be distinguished from that of Ziaur Rahman, 1975-1982, whose accession to power followed the assassination of Sheikh Mujibur Rahman on August 15, 1975. The Ershad era can be divided into an initial period in which Ershad became a virtual dictator, 1983-1986, a following period, 1987-1990, in which he assumed the mantle as leader of a dominant political party (the Jatiya party), and a third period, 1991-1995, in which Ershad had stepped down and the country transitioned toward a more democratic political system.

Table 2 summarizes the periods and sub-periods just described. All of the macroeconomic data for analysis of Bangladesh is available annually only and on a fiscal year basis, so the years should be understood to refer to fiscal years. For instance, the 2019 fiscal year is from July 1, 2019 to June 30, 2020.

Having defined three separate periods of Bangladesh economic history, let us now briefly characterize each of them. The first period, 1971-1982, encompasses the chaotic time

Table 2. Successive government regimes in Bangladesh, 1971-2019

1971-1982	
1971-1974	Sheikh Mujibur Rahman
1975-1982	Ziaur Rahman
1983-1995	
1983-1986	Hossain Muhammad Ershad -1: dictator
1987-1990	Hossain Muhammad Ershad -2: dominant party rule (JP)
1991-1995	transition
1996-2019	

Table 3. Bangladesh government budget accounting results, 1971-2019

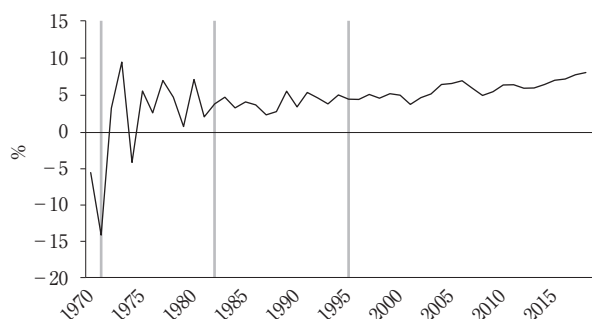
(Percentage of GDP)

		Sources of government funding in year t , percentage of GDP				Total
		Domestic debt	Foreign debt	Seigniorage		
				Money issuing	Passive	
1971-1982		0.39	2.11	-0.26	0.92	3.16
1971-1974	Sheikh Mujibur	2.10	2.01	-0.94	1.81	4.98
1975-1982	Ziaur Rahman	-0.25	2.14	-0.01	0.58	2.47
1983-1995		-0.01	1.12	0.24	0.56	1.91
1983-1986	Ershad-1: dictator	-0.32	2.77	0.22	0.60	3.27
1987-1990	Ershad-2: dominant party rule (JP)	-0.23	0.80	0.26	0.59	1.42
1991-1995	transition	0.41	0.07	0.23	0.51	1.21
1996-2019		0.37	-1.13	0.08	0.96	0.27

		Government obligations in year t , percentage of GDP				Total
		Domestic debt servicing	Foreign debt servicing	Primary deficit		
				Officially reported	Unreported	
1971-1982		-0.10	-0.57	1.69	2.13	3.16
1971-1974	Sheikh Mujibur	-0.81	2.45	1.05	2.30	4.98
1975-1982	Ziaur Rahman	0.17	-1.70	1.94	2.06	2.47
1983-1995		0.01	-7.49	2.76	6.62	1.91
1983-1986	Ershad-1: dictator	0.04	-3.57	1.86	4.93	3.27
1987-1990	Ershad-2: dominant party rule (JP)	0.02	-6.20	2.33	5.27	1.42
1991-1995	transition	-0.01	-11.65	3.82	9.05	1.21
1996-2019		-0.01	-8.85	4.63	4.51	0.27

Source: Author's own calculation

Figure 1. Per-capita real GDP growth (annual %),
Bangladesh, 1971-2019



Data source: World Bank, WDI.

following the civil war in which Bangladesh first gained independence. Two successive governments oversaw nationalization of major industry, restriction of private and foreign investment, and inflation of the currency. The 1974 famine in which more than 1 million persons may have died, was the result of failed economic policy, not natural calamity. The second period, 1983-1995—the Ershad era, saw the evolution of the political system, and a measured opening of the economy to private and foreign investment, increased reliance on foreign loans, and expansion of the tax base. The third period, 1996-2019, has seen expansion of the ready-to-wear garment industry, rising per-capita income, and deepening of foreign trade and investment.

Before describing some of the details of the differing monetary and fiscal policies of each period let us first present the government budget constraint items for each period and sub period, all as percentages of GDP. These data are in Table 3. The data sources are listed in appendix Table A. 1 and the annual values for each item, and for the raw data on which they are based are shown in appendix Table A. 2.

It should be evident from Table 3 that the sources of government funding during the first period were tilted more toward domestic and foreign debt than in the second and third period. Also, the beginning of the first period, the Mujibur-era, 1971-1974, had a much heavier reliance on seigniorage than any of the periods or sub-periods that came after.

The second period—the Ershad era—evolved over time towards reduced reliance on foreign loans. The unreported primary deficit steadily grew, which might suggest growing secrecy and corruption, even compared to the first period.

As shown in Figure 1, the three different periods have exhibited markedly different growth rates in per-capita real GDP, the initial period showing negative growth (1971-1982), the second period moderate growth (1983-1995), and the third period rapid growth (1996-2019).

These are background, let us now delve into some details of the monetary and fiscal

policies adopted in each period and their likely consequences.

4. Three eras of Bangladesh economic history

To understand the differences in monetary and fiscal policy in each government regime, it is necessary to establish the basic chronology of events and fundamental differences in policy orientation of each regime.

1971–1975, Sheikh Mujibur Rahman

The initial Bangladesh government was dominated by Sheikh Mujibur Rahman (“Mujib”) — called the “father of Bangladesh.” He had been a leader of the Bangladesh liberation movement that led to the civil war and independence. In the Pakistan general elections Dec 7, 1970, the political party he had founded and led, the Awami League, had won a majority in the East Pakistan provincial legislature. Upon deadlock in negotiations to form a Pakistan government (with Bhutto as president and Mujib as prime minister) in March 7, 1971, Mujib had called for independence. Civil war ensued and Mujib was arrested and taken to West Pakistan. Independence was achieved on December 16, 1971, with surrender of the Pakistan army and liberation of Dhaka. The Awami League party assumed control with Mujib as provisional president from April 17, 1971, and then as prime minister from January 12, 1972 to January 24, 1975. A new constitution was enacted December 16, 1972, and the first parliamentary elections were held in March 1973, with the Awami League securing a decisive majority. In December 1974, following the chaos that his economic policies had engendered which included a deadly famine, Mujib instituted single-party rule (under the banner of his newly-founded BaKSAL party), cementing his position. In August 15, 1975, Mujib was assassinated by junior army officers along with immediate family members and his entourage. His daughter Sheikh Hasina was in Germany at the time and survived and lived on to herself become a long-serving prime minister of Bangladesh.

The economic policies of the Mujib era, 1971–1975, are rooted in industrial socialism, government rationing, restriction of private investment, control of foreign exchange, and discouragement of foreign investment. The industrial socialism is well described by Rahim (1978). In March 1972 (three months after independence), the Awami League government fulfilled its 1970 election manifesto to nationalize heavy industry (iron and steel, mining, machine tools, heavy engineering, petrochemicals, fertilizers, cement, fuel, and power). This entailed a government takeover of 620 industrial units with total fixed assets of Tk. 3.77 billion. Foreign investment was virtually blocked. Wide sectors of the economy were completely reserved for public enterprise, while a ceiling was imposed on private investment in the few remaining sectors. In January 1973 the ceiling on private investment was

2.5-million taka with capital assets limited to 3.5 million. The stock market was shut down. The aim was that private enterprise would be limited to small businesses. Under the banner of land reform, efforts were made to collectivize agriculture. Consumer goods were subject to government rationing. From July 1973 to December 1975, annual average private investment in Bangladesh was a mere 100-million taka.

Following independence, devastation was widespread, and the aftermath of the conflict included ten million refugees. The currency system was an immediate problem. Hossain (1999) provides many details regarding the management of the money supply and resulting inflation. As a practical matter, the currency of the new country consisted of Pakistani currency notes stamped with an official Bangladesh seal; the government had no means of printing its own notes. Additionally, the government pegged the Bangladeshi “taka” to the Indian rupee at parity, with the rupee acknowledged as “quasi-legal” tender. Bangladesh was under Indian occupation from December 1971 to April 1972, and so allowing the Indian currency to circulate solved immediate liquidity problems but created new problems. The pegging of the taka-rupee exchange rate resulted in windfalls for Indians who were enabled to cross freely into Bangladesh and make purchases, which contributed to inflation in Bangladesh but affording no seigniorage to the Bangladesh government. Counterfeiting was apparently also a rampant problem in those years (1972-3). In January 1972, the government pegged the taka to the British pound, which amounted to a 50 percent devaluation of the Bangladesh currency. These arcane matters had dramatic implications.

Beginning in March 1974, Bangladesh experienced one of its worst famines. The death count is unknown. Although the official claim is that 70,000 persons died, some suspect the true number is more than one million. As the Nobel laureate Amartya Sen (1982) has argued, the 1974 Bangladesh famine was not the result of impaired production of rice and other food grains. It was a failure of allocation, resulting from government interference with private exchange. As discussed above, the Mujib government had widely substituted political control for market allocation. Bangladesh government mismanagement of foreign exchange and trade was the main cause of the famine. As Hossain (1999) explains, pegging of the taka to the Indian rupee, even as the inflation rate in Bangladesh was four times greater than that in India, 1972-1975, resulted in the taka being grossly overvalued relative to the rupee. There was a huge demand for Bangladesh exports including food grains, and limited supply of imports. The export of rice (smuggling of rice) pushed up its price in Bangladesh, which incited hoarding by those who could afford it. The higher price of rice meant starvation for those who could not afford it. The 1974 famine was an economic policy disaster, not a natural disaster.

In thinking about the fiscal and monetary policy regime of the Mujib era, consider the sources of government funding. The widespread nationalization of industry meant that

government funding would be in the form of profits from government enterprise. To maintain that profit stream, it was necessary to protect the government enterprises from competition by private suppliers. The ceiling on private investment and blocking of foreign investment were necessary to assure that the government enterprises would remain profitable. The burden of the implicit tax would fall on the customers of the government enterprises in the form of the higher prices they were now paying compared to the case with free entry. In some way, it made sense to collect taxes in this way, because of the obvious difficulty of taxing private enterprise directly in an economy with a large informal sector. The nationalization of industry by the Awami League government has been interpreted as an ideological position in favor of socialism but it could alternately be considered a practical response to a natural constraint on the collection and enforcement of taxes. One problem with funding government with the profit from government industrial monopolies is corruption. The profit is inevitably diverted by the enterprise managers and overseers.

Seigniorage is another way of funding government. In the Mujib era, inflation soared but seigniorage was still limited because of counterfeiting and because of the flawed policy of adopting a fixed exchange rate system with a peg to the Rupee, rather than a floating exchange rate. This flawed policy was the main cause of the 1974 famine.

1975-1982, Ziaur Rahman

The shocking assassination of Sheikh Mujibur Rahman and family in August 15, 1975, was followed by a confusing situation with coups and countercoups. The one to emerge from these events was Ziaur Rahman who had been the deputy Army chief of staff. With the country under a state of martial law, he became president in April 21, 1977. He reinstated multi-party politics, himself founding the Bangladesh Nationalist Party (BNP) in 1978, one of the two dominant political parties in Bangladesh ever since; the other one is the Awami League. Zia was elected to a five-year term by a large majority in the June 1978 elections.

There had already been some relaxation of the industrial socialism policies. From mid-1974, the stock market was reactivated. In December 1975, the ceiling on private investment was raised to 100-million taka and foreign investment was to be approved on a case-by-case basis, which was still very restrictive. Also, in December 1975, it was announced that the government would divest some enterprises, presumably ones that were generating heavy losses. Although private enterprise now had some toehold, private loans would still have to come from government banks (at that time virtually all the banks in Bangladesh were government banks). Political control and oversight remained pervasive. In some ways that is still true in Bangladesh today. The Zia era, like the Mujib era before it, ended in assassination. Zia was killed on May 30, 1981 by dissident military officers.

1983-1995 Hussain Muhammad Ershad**1983-1986 Hussain Muhammad Ershad-1: dictator**

In the 1982 election the BNP had again won. This result was swept aside on March 24, 1982 when army chief of staff Hussain Muhammad Ershad imposed martial law and suspended the constitution and political parties in what amounted to a bloodless coup. He ended up heading the government of Bangladesh for the next 8 years. At first, he allowed a civilian to serve as president while he controlled everything from the wings as army chief of staff, himself assuming the presidency only on December 11, 1983. Ershad had early on announced an intention to free the economy from government controls that had failed to promote economic development and were caught up in a morass of corruption. This is ironic in that Ershad himself is now widely characterized as the most corrupt of all Bangladesh heads of state.

Ershad did continue the privatization of industry that had been initiated under Zia. Also, private banks were now chartered. According to Hassan and Raihan (2017, p. 108), Ershad himself personally reviewed and approved or denied formal requests for government licenses, permissions, procurement contracts and so on. He operated a patronage system in which control of government authority was a vehicle to be exercised for private gain.

1987-1990 Hussain Muhammad Ershad-2: dominant party rule (JP)

Ershad organized a state-sponsored political party called the Jatiya Party (JP) in January 1986, which won a majority of seats in the May 7, 1986 parliamentary elections, denounced as unfair by opposition parties. Nevertheless, Ershad, was elected as president on October 15, 1986 (the constitution at that time provided for election of presidents to a five-year terms). The leading opposition parties, the Awami League led by Sheikh Hasina, daughter of Mujib, and the BNP led by Khaleda Zia, the widow of Zia, organized mass demonstrations and called for Ershad to resign. This ended in Ershad dissolving the parliament. The March 3, 1988 election was boycotted by both the Awami League and the BNP. Even though the JP had won a majority of seats, protests continued to mount. Finally, on December 6, 1990, Ershad resigned as president but continued as chairman of the Jatiya Party and Member of Parliament.

1991-1995 transition

The February 27, 1990 election brought in an interim government, made up of a coalition of the BNL and another right-wing party, with Khalida Zia as prime minister. Ershad was in prison after having been sentenced on corruption charges. In 1991, a new constitution restored the parliamentary system in which the prime minister and not president was head of state. The leading opposition party, the Awami League, boycotted the February 15, 1996 election which the BNL won. Following further demonstrations, another election in June 1996 was won by Awami League, and its leader, Sheikh Hasina, became prime

minister.

It was during this transition period that foreign exchange controls were first relaxed. On March 24, 1994 the Bangladesh currency, the taka, was made fully convertible on current account. This was a step towards opening the economy to foreign trade and investment. Current account transactions include imports and exports of goods and services. Financial account transactions—involving, securities, loans, and real estate—remained subject to government control. Although the foreign exchange value of the taka is, since 1994, determined in the market, the central bank (The Bangladesh Bank) has intervened in that market to influence the exchange rate. The explicit controls and limits on financial account transactions involving foreign exchange limit the reserves that the Bangladesh Bank needs to commit to achieve the exchange rate targets that it sets. The Bangladesh Bank foreign exchange market interventions until May 2004, were described as a “managed float,” maintaining the exchange rate within a band. From May 2004 since, it is said that the taka is floating. That means the Bangladesh Bank is not attempting to influence the market exchange rate through its own trading. It is still influencing the exchange rate by its granting or withholding of requests to conduct financial account foreign exchange transactions. The government controls make foreign exchange artificially scarce which creates economic rents that the government authorities can bestow or not based on political considerations. The ongoing control of foreign exchange is an element of “crony capitalism” that survived the Mujib, Zia, and Ershad eras and remains alive in Bangladesh to the present day.

1996–2019

Since 1996, parliamentary democracy has persisted, with alternating governments under AL with Sheikh Hasin as prime minister (1996–2001 and 2009–), or BNL with Khalida Zia as prime minister (2001–2006), except for a period from 2006 to 2008, in which a “caretaker government” stood in to resolve a political impasse.

The period since 1996 in Bangladesh has exhibited some marked departures from the previous eras. As I noted earlier, the growth rate in per-capita GDP has been higher than before. Private enterprise, led by the ready-made-garments sector is, the main driver of investment, output, and trade. There are many reasons behind the success of the garment industry in Bangladesh. One, and not the least, is the multilateral agreement in the Uruguay round of GATT to open world trade in cotton textiles. As of January 1, 1995, the multi fiber agreement that had allowed protection of textile industries in the high-income countries of the world was ended, paving the way for the Bangladesh garment industry to compete in world markets. The industry was well-positioned to obtain the bank loans and access to foreign exchange that were needed to take advantage of this opportunity. Its trade group the Bangladesh Garment Manufacturing and Exporting Association (BGMEA)

is the intermediary between the firms and the government that handles all requests for government permission that arise in the manufacture and export of garments. See Hassan and Raihan (2017, p.117–120) and sources cited there for details of these arrangements. In short, the modern era in Bangladesh has seen the country open to trade and investment, and begin to grow rapidly, even though vestiges of the earlier government regulation and control are still present.

Having described the successive government regimes and their general policy orientations, we now turn to this paper's main focus—the monetary and fiscal policy of Bangladesh. Did the successive government regimes move the country along its intertemporal government budget constraint in a reckless manner or a prudent one?

5. Monetary and fiscal policy of Bangladesh, 1971–2020

Previous studies have conducted time-series analysis of the effects of monetary and fiscal policy on macroeconomic aggregates in Bangladesh. Hasan et al (2016), Rana and Wahid (2017), Karim (2019), Hossain et al (2020), and Younis (2021) are the most recent examples. Each of these papers estimate VAR models and reach roughly similar conclusions. An increase in the rate of growth of the money stock is followed by an increase in the price level. Changes in fiscal policy variables—most of the studies use some variant of the annual fiscal deficit—have much weaker short-run effects than monetary policy. Karim (2019), the most comprehensive of the studies, uses annual data 1971–2017, that includes real government consumption expenditure, broad money supply, bank lending interest rate, taka-USD exchange rate, real GDP, and GDP deflator. He estimates a structural vector auto-regression model with Cholesky decomposition in which money supply and government consumption are exogenous and first affect the foreign exchange rate, then real GDP, then the price level, and finally the lending rate. The results comport with the standard neo-Keynesian model of the economics textbooks. A monetary policy shock at first affects real GDP but later affects the price level. A shock to government spending mainly affects the lending rate with little change in real GDP. In short, standard macroeconomics fits the Bangladesh case. The other papers seem broadly in accord with this although they use data for shorter spans of years than Karim (2019) and adopt different measures of fiscal policy.

The VAR studies are focused on the business cycle, a short-run phenomenon. The focus of the Sargent model is the long-run effect of monetary and fiscal policy. The message of Sargent and Wallace (1981) is that in the long-run perspective of the intertemporal government budget constraint, monetary and fiscal policy are interdependent. Monetary policy embodies fiscal policy in the sense that seigniorage is a source of government funds;

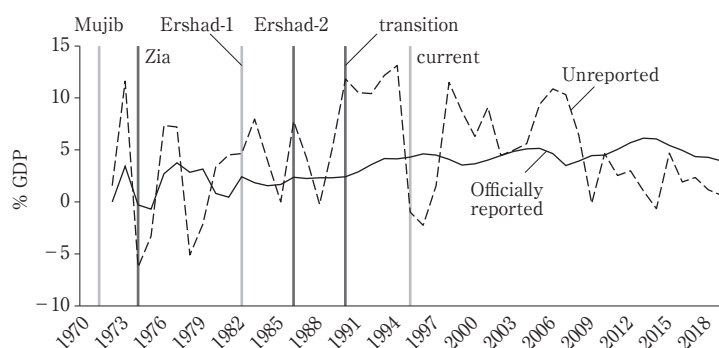
the inflation tax is indeed a tax. If other taxes are insufficient to fund government spending, then the shortfall will be made up either by seigniorage revenue (an inflation tax) or by default on government debt. The story of the Latin American countries told in Kehoe and Nicolini (2021) is that the “long run” in which such crises happen can be as short as a few years.

The budget accounting framework is intended to track movements along the intertemporal government budget constraint that reflect monetary and fiscal policies, and that might reveal patterns associated with fiscal crises of the sort that have plagued Latin American countries. A key point in this approach is that the budget accounting framework imputes the unreported and unobserved component of the government’s primary fiscal deficit. The VAR studies of fiscal policy have all relied only on the observed and reported items in the government spending and revenue. The unreported primary deficit in Bangladesh, as in the Latin American countries, reveals an important and hidden component of fiscal policy.

The unreported primary deficit as shown in Table 3, is calculated by subtracting the reported primary deficit and servicing of government debt from the total government funding arising from seigniorage and from changes in outstanding government debt. The unreported primary deficit thus reflects errors and omissions. The servicing of foreign debt is drawn from the Bangladesh government ministry of finance. The domestic debt servicing is an approximate value equal to 6 percent of the outstanding domestic debt. We arrive at the 6 percent value by averaging the government treasury rate and national savings instrument rate. Domestic debt is small relative to foreign debt and so the errors from estimating domestic debt servicing in this way are likely to be relatively small. The foreign debt servicing is probably accurate. The upshot is that our value for the “unreported primary deficit” mostly encompasses omissions from the other budget items. These omissions are various hidden transfers from the government to private actors, which include such items as unreported expenses and profits of government enterprises, and unreported transfer payments of other government entities. As suggested by Kehoe, Nicolini, and Sargent (2021), these off-the-book expenses include such items as “subsidies through state-owned development banks or state-owned companies and, in many occasions ... seigniorage from the central bank to cover those losses.”

Based on my calculation, the unreported primary deficit, 1972–2019, averaged 4.53 percent of GDP per year, while the officially reported primary deficit averaged 3.45 percent of GDP per year. The hidden expenses of the government are on average greater than the officially reported primary deficit. The primary deficits, both officially reported and unreported (but here imputed) are shown in Figure 2. The highest levels of unreported primary deficits occurred during the transition period 1991 to 1994 after Ershad was driven from office. Another spike may be noted in 1973 during the Mujib era. Since 2006, the unreported primary deficits seem to have become smaller. The officially

Figure 2. Primary deficit, percent GDP, 1971-2019

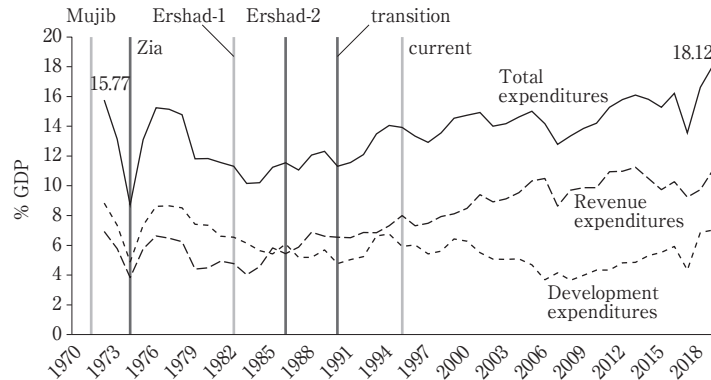


reported primary deficits exhibit no dramatic peaks or valleys over the entire interval of observation.

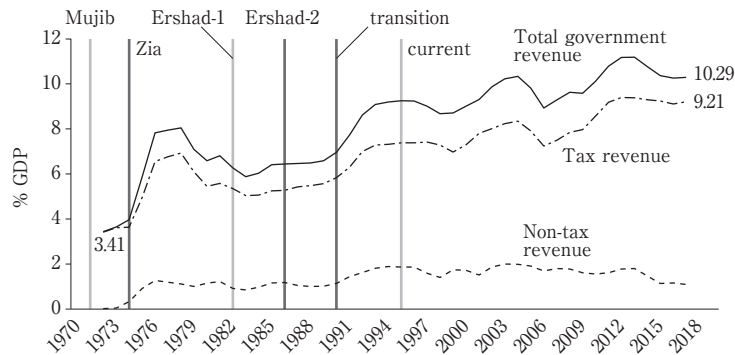
The tentative inference to be drawn from this is that corruption has been an endemic feature of Bangladesh government institutions from the time of its founding but is now waning. Kabir and Flath (2021) and Kabir (2021) describe the once dominant position of government banks in the Bangladesh financial system, and their steady displacement by private banks in recent decades. In the 1990s, government banks' share of total bank assets was 82%, in the 2000s, 40%, and in the 2010s, 34%. As government banks retrenched, financial intermediation deepened, and private saving has risen. Based on the estimates of Kabir and Flath (2021), in the 1970s, Bangladesh national saving was 11% of the level it would have reached given its demographic profile and economic growth rate, based on comparison with high-income countries with fully developed financial systems. Financial intermediation was stunted in Bangladesh, as in so many low-income countries. In the 1980s Bangladesh national saving had risen to 61% of the level it would have attained with a fully developed financial system. Since 2000, Bangladesh saving is 77% of the level implied by full financial development. The government is less of a gatekeeper to credit in Bangladesh now than before. The government banks in Bangladesh have been vehicles of corruption and are now being pushed aside and shut down. For more details see Kabir (2021).

5.1.1. Government expenditure and revenue

The government expenditure and revenue behind the officially reported primary fiscal deficit can be briefly described. The categories of spending are standard items — education, health, agriculture, power, transport, public administration, and social welfare. Khanam and Khanam (2017) describe Bangladesh central government spending, 1974 to 2014. In the central government budget, expenditures are separated into current expenditures and capital expenditures (in Bangladesh these are called 'revenue expenditures' and 'development expenditures,' with the annual budget of the latter dubbed the annual development

Figure 3. Government expenditures, percent GDP, 1972–2017

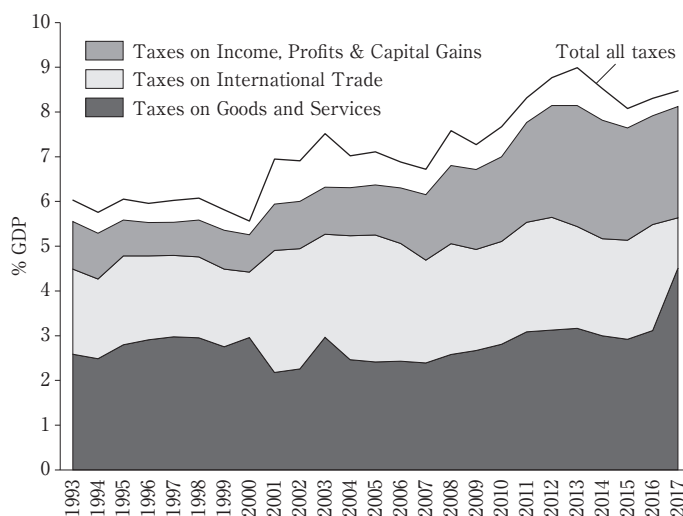
Data source: ERD Annual Report, Ministry of Finance, Bangladesh

Figure 4. Government revenue, percent GDP, 1972–2017

Data source: National Board of Revenue (NBR), ERD Annual Report, Ministry of Finance, Bangladesh

program and usually referred to by its acronym, ADP). The current expenditures—salaries of government employees, procurement spending and transfers including subsidies and interest payments—are mostly composed of police, jails and the judiciary, defense, education, and health. As Khanam and Khanam show, the biggest variation in current expenditures over the years is in interest payments, the other components rising along with GDP. The capital expenditures—spending on public investment projects—are mostly for infrastructure such as roads, bridges, electricity grids telecommunication, and government buildings including schools and hospitals. Capital expenditures have risen along with GDP and over the years tilted more toward health and education and less for defense.

Figure 3 shows the trajectory of both categories of expenditure as percentages of GDP. Development expenditures that include infrastructure spending occupy a smaller percent of GDP in the current era than in the previous ones, but real GDP itself has become much higher. Real infrastructure spending has risen along with real GDP. Revenue expenditures have risen as a percent of GDP, more than offsetting the decline in development expendi-

Figure 5. Tax revenue, percent GDP, 1993-2017

Data source: United Nations University (UNU-WIDER)

tures as a percent of GDP.

Figure 4 shows the evolution of government revenue from taxes and from other sources as a percent of GDP. Total revenue as a percent of GDP follows a trajectory much like that of revenue expenditures.

As shown in Figure 4, government revenue, most of which is from taxes, has risen from less than 4 percent of GDP in 1972 to around 10 percent of GDP in 2018. Taxes in Bangladesh are still among the lowest of any country in the world. The main sources of tax revenue in Bangladesh, 1992 to 2017 are shown in Figure 5. (Similar data is not available for earlier years). Taxes on goods and services, taxes on international trade, and taxes on profits and capital gains are the main ones. It is not unusual for developing countries with large informal sectors to rely much on border taxes — taxes on international trade. These taxes are distorting but can be more easily enforced than other, broader based taxes. The picture that emerges here is one in which the officially reported fiscal deficit encompasses a flow of tax revenue that is small in relation to GDP.

5.2. Government debt

The persistence of primary deficits in Bangladesh is unsurprising given the small flow of taxes and other government revenue as just described. This makes the large “unreported primary deficit” imputed from the budget accounting identity all the more credible. Recall that in the Mujib era, 1971-1974, the profit from government enterprise was adopted as the essential source of revenue funding the government. To assure that the government enterprises would generate profit, they were protected from competition. Low ceilings were placed on private investment, and foreign investment was virtually blocked. Much of the

Figure 6. Funds from government debt, percent GDP, 1971–2019

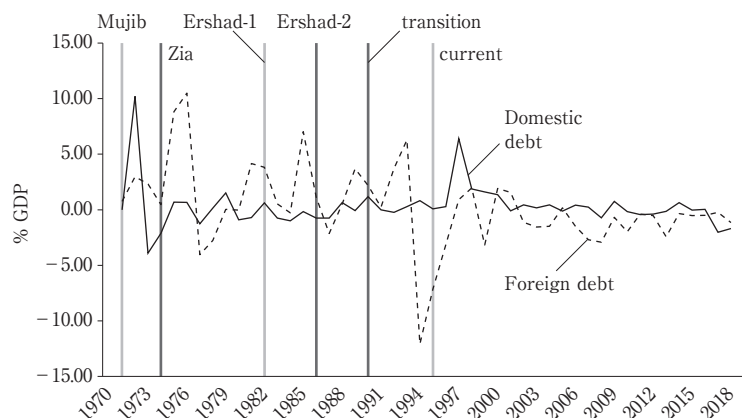
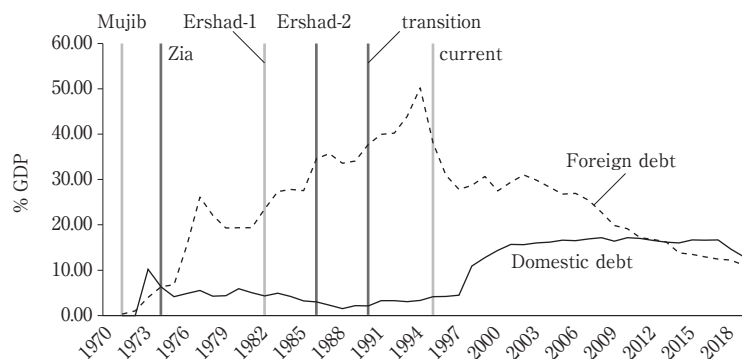


Figure 7. Government debt outstanding, percent GDP, 1971–2019



economic profit of the government enterprises was diverted to possibly corrupt ends and unreported. Rather than funding the government, the nationalization of major industries ended up adding to the fiscal deficit. Based on the budget accounting identity, the primary deficit — both reported and unreported — had to be funded either by government debt or by seigniorage. Most of that funding came from government debt.

One of the most striking patterns to emerge from this investigation is the great reliance on foreign debt as a source of funds in the first two government regimes, 1971–1982 and 1983–1995, and the reduced reliance on foreign debt but increased reliance on domestic debt since 1996. Figure 6 shows this pattern based on the budget accounting. Figure 7 graphs the trajectory of outstanding foreign debt and domestic debt that these funding patterns engendered.

There is a simple explanation for the decline in the debt-to-GDP ratio since 1994. From 1971 to 1994 — 23 years — real GDP doubled. From 1994 to 2019 — 25 years — it quadrupled. The average annual growth rate of real GDP went from 3 percent per year, 1971–1994, to 6 percent per year, 1994–2019. Since 1994, the real GDP has been growing by an

annual average percentage rate which is higher than the real rate of interest. That means that a primary fiscal deficit is consistent with a falling debt-to-GDP ratio.

The switch in composition of debt from foreign debt to domestic debt is possibly a result of changes in the world environment. With the fall of the Soviet Union in 1989, the Cold War era ended, which undercut much of the motivation of the Western bloc for lending to developing countries at concessionary rates. Another element behind the rise in domestic debt as a percent of GDP in the current era is that much of the domestic debt (about half the outstanding amount in 2018) now comprises national saving certificates. These are non-tradable saving certificates with above-market interest rates. They constitute a social security pension system in nascent form (Begum and Flath, 2020a). Expansion of domestic debt through the issue of national saving certificates epitomizes the expansion of social welfare programs by the current government regime.

5.3. Monetary regime and monetary policy

As described by the contributors to Kehoe and Nicolini, eds, (2021), the Latin American countries that encountered fiscal crises had accumulated foreign debt that they were unable to service. Domestic debt may be monetized but foreign debt cannot be because it is denominated in foreign currency and cannot be inflated away. The fiscal crises that many of the Latin American countries experienced entailed not only default on foreign debt, but also hyperinflation. Once diversion of taxes proved inadequate for servicing the foreign debt, seigniorage became the only available means of funding the government, and the resulting inflation had the further effect of monetizing the domestic debt, tantamount to default on the domestic debt also. These unfortunate events were usually triggered by an external shock — a crash in export price (of oil), a collapse in foreign demand, or a natural disaster such as an earthquake —, but were typically preceded by imprudent expansions of government spending, either officially recorded or not.

In the Bangladesh case, there is one instance that might be characterized as hyperinflation, and that was during the Mujib era. In fiscal years 1973, 1974, and 1975, the GDP deflator rose by 61.4%, 44.5%, and 80.6%. The last of these coincides with the 1974 famine. The trajectory of the inflation rate is graphed in Figure 8. The figure also shows the ratio of broad money (M2) to GDP, which has risen steadily over the years. This reflects an increase in the demand for real money balances as the expected rate of inflation has come down (following the persistent moderation in actual inflation rate), which is consistent with the demand-for-money function advanced by Kehoe, Nicolini, and Sargent (2021, appendix) in support of their interpretation the way that monetary policy traverses the inter-temporal government budget constraint.

As discussed in Section 3, the expansion of the money supply that fueled the high inflation rates, 1973–1975, followed the adoption in December 1971 of the Indian rupee as a

Figure 8. Broad money as a fraction of GDP and the rate of inflation, 1971–2019

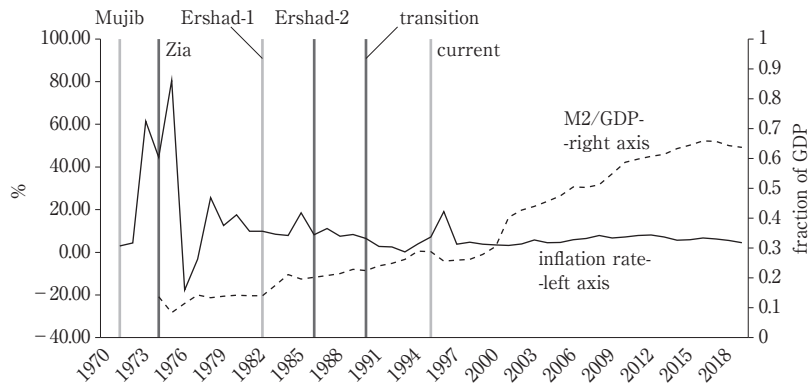
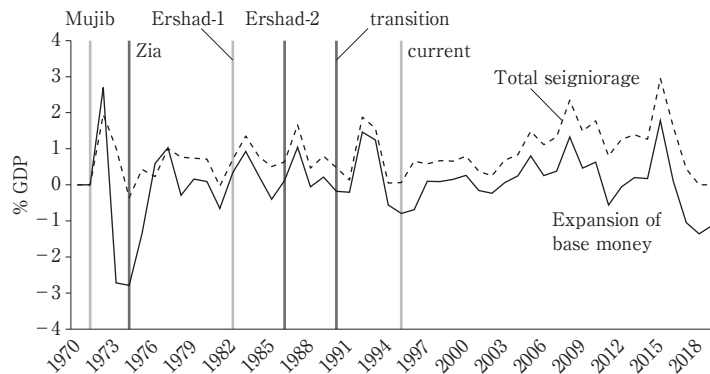


Figure 9. Seigniorage as a source of funds, 1972–2019



“quasi-legal tender” at parity with the taka at a time when many Indians were present within Bangladesh and the border between India and Bangladesh was virtually open. This represented a huge expansion of the effective supply of money circulating in Bangladesh, without conferring seigniorage on the government of Bangladesh.

Figure 9 shows seigniorage a percent of GDP based on the government budget equation data. The seigniorage is broken into two components, one equal to the change from one year to the next in base money as a percent of GDP, and the other a residual term reflecting the seigniorage that arises from the increasing demand for money as nominal GDP rises. Total seigniorage has fluctuated around 1 percent of GDP throughout the entire period. It is not a major source of government funds in Bangladesh. Even during the early years of the country, foreign loans were the much greater source of funding Bangladesh government obligations.

The upshot of this is that the high inflation, 1973–1975, was not the result of a reach for seigniorage to fund a government in extreme need of fiscal resources. The inflation was an outcome of tying the Bangladesh money supply to that of India, which caused a

hyperinflation but without conferring seigniorage on the Bangladesh government. Why they did it is a bit of a mystery. Its outcome was disastrous. The misalignment between the taka and the rupee caused massive export of rice and food grains to India which was the main cause of the 1974 famine.

6. Conclusion

The study analyzes main trends of Bangladesh's fiscal and monetary policy indicators between 1971 and 2020. It is a government budget constraint analysis following Kehoe, Nicolini, and Sargent (2021), to identify the sources of deficit financing throughout that period, as they did for Latin American countries. The analysis is divided into three episodes (1971-1982, 1983-1995, and 1996-2020), based on succession of government regimes with differing policy orientations. The growth rate in per-capita real GDP was negative during the first episode, moderate during the second, and rapid during the third one.

Because the economic history of Bangladesh is characterized by disappointingly low GDP per capita growth and high inflation in its initial period following independence, we ask whether the poor macroeconomic performance can be linked to bad fiscal and monetary policy. We find that between 1971 and 1982, the size of the government financing needs was large as revenue collection was very low, and the use of foreign loans and grant to cover the government's obligations was the highest for the whole period covered by this study. This coincided with an era of relatively low output growth and high foreign debt and grants. The government's size remained almost the same after the most vulnerable episode of 1971-1982, with high budget deficits almost fully dependent on foreign loans for financing.

At the end of the second episode in the early 1990s, the newly established democratic government changed those patterns abruptly. In particular, the government's financing needs were financed more from domestic debt, while tax revenue collection increased, and foreign debt was retrenched. The rate of growth in per capita real GDP increased steadily.

Finally, in the third episode, from 1996 up to the present, taxes have remained low, while rapid growth in real GDP has allowed the debt-to-GDP to decrease even though primary fiscal deficits persist. The Bangladesh government is relying less on foreign loans than before.

Bangladesh has managed to avoid some pitfalls that less fortunate countries have succumbed to. The Bangladesh government did not imprudently expand government spending beyond its capacity to fund it. It did not take on more foreign debt than it could service and did not resort to inflation as an alternative to debt to fund government

obligations. Early in the history of the country, its fiscal system was initially yoked to extracting profit from government monopolies. That path stifled private enterprises, blocked foreign investment, and invited corruption. After moving away from that “industrial socialism” model, the country eventually found a better way to fund its government.

Appendix

Table A1. Variables and data source

Variable	Data source
Base money =Currency Outside Banks (BDT) +Non-Scheduled Banks Balances with the Central Bank (BDT) +Scheduled Banks Balances with the Central Bank (BDT)	Monthly Economic Trend, Bangladesh Bank
Domestic debt stock (Net) (BDT)*	Monthly Economic Trend, Bangladesh Bank
Foreign debt outstanding (USD)	Economic Relations Division, Ministry of Finance, Bangladesh.
GDP (current BDT)	World Bank World, Development Indicators
GDP (current USD)	World Bank World, Development Indicators
Exchange rate (BDT per USD)	World Bank World, Development Indicators
Domestic inflation	World Bank World, Development Indicators
US inflation	World Bank World, Development Indicators
Domestic price level	Authors calculation
Foreign price level	Authors calculation
Tax revenue	Economic Relations Division, Ministry of Finance, Bangladesh and United Nations University https://www.wider.unu.edu/project/government-revenue-dataset

Appendix A2. Budget accounting, 1971-2019

Percent GDP

	Sources of government funding in year t , percentage of GDP				total	Government obligations in year t , percentage of GDP				total
	Domestic debt	Foreign debt	Seigniorage			Domestic return	Foreign return	Primary deficit		
			Money issuing	Passive				Officially reported	Unreported	
1971							0.30			
1972	0.00	0.74	2.70	-0.75	2.69	0.00	1.14	0.00	1.56	2.69
1973	10.20	2.98	-2.72	3.74	14.20	-3.72	2.87	3.43	11.61	14.20
1974	-3.91	2.32	-2.79	2.44	-1.94	1.29	3.34	-0.29	-6.27	-1.94
1975	-2.11	0.47	-1.35	1.78	-1.21	0.91	1.86	-0.68	-3.30	-1.21
1976	0.69	8.81	0.60	-0.37	9.73	0.15	-0.48	2.71	7.35	9.73
1977	0.65	10.50	1.03	-0.02	12.16	0.04	1.15	3.76	7.21	12.16
1978	-1.26	-4.03	-0.29	1.05	-4.52	0.27	-2.55	2.86	-5.10	-4.52
1979	0.14	-2.76	0.16	0.58	-1.88	-0.01	-2.87	3.17	-2.16	-1.88
1980	1.52	0.03	0.09	0.62	2.27	-0.16	-1.73	0.81	3.35	2.27
1981	-0.90	-0.02	-0.65	0.62	-0.96	0.09	-6.02	0.44	4.53	-0.96
1982	-0.70	4.15	0.34	0.37	4.17	0.04	-2.92	2.41	4.64	4.17
1983	0.62	3.82	0.93	0.42	5.79	-0.04	-3.98	1.83	7.98	5.79
1984	-0.74	0.53	0.25	0.54	0.58	0.05	-5.00	1.57	3.97	0.58
1985	-1.00	-0.28	-0.40	0.91	-0.78	0.13	-2.61	1.69	0.01	-0.78
1986	-0.17	7.01	0.12	0.51	7.48	0.01	-2.67	2.37	7.76	7.48
1987	-0.75	1.13	1.05	0.62	2.04	0.06	-4.49	2.24	4.23	2.04
1988	-0.75	-2.13	-0.06	0.52	-2.41	0.03	-4.53	2.33	-0.24	-2.41
1989	0.65	0.51	0.22	0.58	1.95	-0.03	-5.61	2.32	5.27	1.95
1990	-0.08	3.69	-0.18	0.65	4.09	0.00	-10.18	2.43	11.83	4.09
1991	1.18	2.19	-0.21	0.34	3.50	0.00	-9.92	2.91	10.51	3.50
1992	0.00	0.24	1.46	0.41	2.12	0.00	-11.88	3.58	10.41	2.12
1993	-0.24	3.70	1.24	0.32	5.02	0.00	-11.32	4.17	12.18	5.02
1994	0.29	6.28	-0.56	0.61	6.62	-0.01	-10.63	4.14	13.12	6.62
1995	0.81	-12.09	-0.79	0.86	-11.22	-0.05	-14.50	4.31	-0.98	-11.22
1996	0.08	-7.15	-0.69	1.35	-6.41	-0.01	-8.77	4.62	-2.25	-6.41
1997	0.28	-3.14	0.10	0.48	-2.28	-0.01	-8.35	4.51	1.56	-2.28
1998	6.38	0.90	0.09	0.58	7.96	-0.24	-7.39	4.10	11.49	7.96
1999	1.87	1.96	0.15	0.50	4.49	-0.05	-7.70	3.55	8.68	4.49
2000	1.60	-3.17	0.26	0.53	-0.78	-0.04	-10.70	3.68	6.29	-0.78

Percent GDP

	Sources of government funding in year t , percentage of GDP				total	Government obligations in year t , percentage of GDP				total
	Domestic debt	Foreign debt	Seigniorage			Domestic return	Foreign return	Primary deficit		
			Money issuing	Passive				Officially reported	Unreported	
2001	1.35	1.92	-0.16	0.53	3.64	-0.03	-9.46	4.03	9.10	3.64
2002	-0.10	1.56	-0.23	0.48	1.70	0.00	-7.24	4.46	4.48	1.70
2003	0.43	-1.14	0.07	0.62	-0.02	-0.02	-9.84	4.85	4.98	-0.02
2004	0.16	-1.56	0.25	0.59	-0.57	-0.01	-11.27	5.10	5.61	-0.57
2005	0.43	-1.50	0.80	0.68	0.41	-0.02	-14.11	5.16	9.39	0.41
2006	-0.13	0.16	0.25	0.86	1.14	0.01	-14.38	4.63	10.88	1.14
2007	0.41	-1.49	0.38	0.95	0.25	-0.03	-13.55	3.49	10.33	0.25
2008	0.25	-2.69	1.33	1.02	-0.10	-0.02	-10.45	3.93	6.44	-0.10
2009	-0.73	-2.92	0.46	1.02	-2.16	0.04	-6.50	4.45	-0.15	-2.16
2010	0.76	-0.69	0.63	1.15	1.85	-0.05	-7.25	4.49	4.65	1.85
2011	-0.16	-1.98	-0.56	1.36	-1.35	0.01	-8.95	5.04	2.55	-1.35
2012	-0.43	-0.39	-0.05	1.32	0.44	0.03	-8.29	5.70	3.00	0.44
2013	-0.39	-0.52	0.20	1.19	0.47	0.03	-6.75	6.14	1.06	0.47
2014	-0.15	-2.43	0.17	1.09	-1.33	0.01	-6.76	6.07	-0.65	-1.33
2015	0.64	-0.34	1.78	1.17	3.25	-0.04	-6.84	5.43	4.70	3.25
2016	-0.04	-0.52	0.10	1.51	1.06	0.00	-5.83	4.97	1.92	1.06
2017	0.04	-0.51	-1.05	1.50	-0.03	0.00	-6.74	4.37	2.35	-0.03
2018	-2.04	-0.23	-1.36	1.36	-2.26	0.14	-7.87	4.29	1.17	-2.26
2019	-1.68	-1.15	-1.12	1.12	-2.84	0.10	-7.54	3.96	0.64	-2.84

Source: Author's own calculation

Notes

- 1) A demand for money function as just alluded to can be deduced from a simple two-period overlapping generations model as shown in Kehoe, Nicolini, and Sargent, (2021, appendix b).

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