II External Environment: Politics, Oil, and Debt

Economic developments in Yemen in the 1990s were driven largely by dramatic changes in the political sphere—in particular, by unification and civil war—and by external events, chief among which was the Gulf crisis at the beginning of the decade. A third major influence was the massive debt overhang inherited from the previous political regimes.

Political Developments: Unity, Gulf Crisis, Civil War, and Democracy

Unification of North and South Yemen in early 1990 opened a decade of dramatic sociopolitical and economic change. As in the unification of Germany, a larger and broadly market-based economy (the YAR) absorbed a smaller, centrally planned economy (the PDRY). At the time of unification, the population of the YAR was estimated at 10.4 million, and that of the PDRY at 2.4 million (Dunbar, 1992); their GDPs were $5.4 billion and $1.3 billion, respectively.[1]

Also as in the German case, unification had been a long-standing aspiration of the Yemeni people in both states and became possible mainly through the effects of *perestroika* in the Soviet Union on its ally, the socialist PDRY. On the economic side, a reduction in financial and technical assistance from the Soviet bloc, combined with declining workers' remittances—a mainstay of the PDRY, accounting for about half of government revenue in the late 1980s—created pressures for a rethinking of the PDRY's development strategy in the mid-1980s. Although the PDRY had achieved respectable improvements in education and other social indicators (more so than the YAR),[2] the economy was in a dismal state as a result of failed socialist reforms in agriculture, fisheries, and port activity. Large Soviet-financed investments in the Shabwah oil field, discovered in 1986, added half a billion dollars to the PDRY's staggering debt (largely to the Soviet Union and her allies), but the oil facilities remained unfinished, and production was limited to 10,000 barrels a day (b/d), which was trucked to the decrepit refinery in Aden.[3] On the political side, the last years of the PDRY saw some liberalization of political activity and the press but were also marked by instability within the political leadership of the country, with violent internal struggles in 1986.

The YAR, in contrast, had witnessed a measure of political stability with some consolidation of central control—even over traditional tribal areas—as well as a measure of economic development despite limited progress in education and health. Oil exploration was in private hands, and discoveries in 1984 quickly led to development of a major oil field (Marib). Production began in 1987, with most of the output exported through a pipeline, reaching about 195,000 b/d in the early 1990s. Although the YAR, like the PDRY, was dependent on workers' remittances, its foreign debt averaged a relatively manageable 60 percent of GDP, well below the PDRY's 180 percent of GDP, during 1987–89.

Development of oil resources was another important catalyst for unification. The nearly simultaneous oil discoveries in the YAR and the PDRY were in adjacent areas, and development and further exploration required settling of outstanding border issues. The first fruits of this effort were a bilateral agreement demilitarizing the border zone in 1988, along with an easing of bilateral travel restrictions and the activation of common institutions, notably the Supreme Yemeni Council, formally in place since 1982. The dynamics set in motion were such that, in late 1989, a "historic agreement" was reached, calling for a draft constitution for a unified Yemen to be presented to both parliaments within six months and a referendum to be held six months thereafter. A unity government was formed in early 1990, and a

[1]These estimates are based on the two countries' national accounts using official exchange rates, which were well below parallel market rates in both countries.

[2]Illiteracy in the PDRY was reduced from 97 percent in 1967, when the PDRY was formed, to 59 percent in 1985; at that point the YAR's illiteracy rate was still 80 percent (Dunbar, 1992).

[3]Shabwah was closed down in 1994 after disappointing results, mainly due to the inappropriate recovery methods introduced in the late 1980s.

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year later an impressive majority in both parts of the country approved a new constitution by popular referendum. The new constitution provided for basic political freedom (for both women and men), including the right to organize and vote and the right of private ownership, and establishing *sharia* (Muslim law) as the principal (but not sole) source of law.

Early on, however, severe strains developed to challenge the newfound unity. Most important, during the Gulf crisis in late 1990, Saudi Arabia—home to the bulk of Yemeni migrant workers, who made up an estimated 17 percent of the Saudi workforce—decided to end the visa and sponsorship exemptions traditionally enjoyed by Yemenis living and working there. As a result, an estimated three-quarters of a million workers returned to Yemen (Dunbar, 1992). Another roughly 50,000 workers returned from other Gulf states. Although most of the repatriated migrants returned to their hometowns and villages, some 60,000 had to be put in refugee camps. The returnees initially lived off their savings, but the loss in remittances and of official assistance from the Gulf states (about $200 million a year in the late 1980s) and the need to accommodate some three-quarters of a million returnees contributed to a rapid deterioration in economic balances, contracting economic activity and fueling inflation. A severe drought during 1990–91 added to the adversity.

Other economic (and political) strains resulted from the way the two very different economic systems were merged. The two civil services were simply added together, with 50–50 sharing of all posts between the former YAR and the former PDRY services, reflecting a similar sharing of the top leadership posts. Harmonization of wage scales at the higher level prevailing in the YAR added to pressures on the public finances. Tensions quickly arose over policy issues—for example, over what education policy to pursue. Hasty attempts to roll back the PDRY's redistribution of farmland, and the slow restitution of real estate nationalized under the PDRY to business owners who had fled, led to dissatisfaction among farmers and the business community. The bloated bureaucracy fueled a rise in governance problems. Many southerners were concerned about certain aspects of traditional YAR society such as the strong tribal influence and the greater circumscription of the role of women; many northerners had similar misgivings about what was perceived as non-Islamic behavior in the south. As a result, the leadership remained largely divided among north-south lines, with southern representatives often abstaining from joint cabinet meetings. Each side largely preserved control over its former armed forces.

At the same time, the introduction of democracy led to a flourishing of political parties (more than 40 of which emerged) and newspapers across a broad political spectrum. In the first unified election in 1993, the electorate largely voted along traditional north-south lines (Kostiner, 1996). The General Peoples' Congress (GPC), which included much of the former YAR's leadership, emerged as the dominant political force, winning nearly half of the available seats. The newly formed Islamic Yemeni Reform Group (YRG), or Islah, came in a distant second, closely followed by the Yemeni Socialist Party (YSP). The YSP was made up largely of the former PDRY leadership and won most seats in the south. There were also a large number of independents and small parties. Although a coalition government including the GPC, the YRG, and the YSP was formed, the election results led to growing estrangement between the southern and northern leaderships, with each focused on the rebuilding of its regional power base. This was also fueled by the development of a southern oil field (Masila), which came on stream in 1993. This field initially produced 40,000 b/d, which was trucked to Aden; output rose to 150,000 b/d as a central processing unit and a pipeline to the Indian Ocean were completed in 1994. Despite many attempts—notably by other Arab states—to mediate between the two sides, the declaration of an independent southern state by parts of the YSP leadership in 1994 triggered a civil war. The war ended with the defeat of the southern forces a few months later, at considerable cost to lives and property.

The new constitution adopted in September 1994 provided for direct popular election of the president. A new government comprising only GPC and Islah representatives was formed and, in 1995–96, was able to reach a broad consensus to start the needed economic and administrative reforms. New elections in April 1997 were boycotted by the YSP and gave the GPC an absolute majority, with Islah again the second-largest party, followed by a number of smaller parties and independents. This time the GPC alone formed the government, although the cabinet included a few independents (the prime minister among them). President Ali Abdullah Saleh also instituted a Consultative Council, including members of the YRG, the YSP, and the GPC along with eminent tribal leaders and other representatives of civil society. The council has no legislative or executive mandate except to debate the major issues and submit recommendations to the president; however, it plays an important role in mediating, for example, differences between parliament and the executive.

In September 1999 President Saleh won another five-year mandate in Yemen's first contested presidential election, running against another GPC member. The YRG refrained from putting up a candidate, and other opposition parties were unable to muster the 10 percent of votes in parliament needed to field a presidential candidate.

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Yemen's Emergence as an Oil Producer

From a regional perspective, Yemen is a minor player in the oil market: estimated proven oil reserves and production levels in 1998–99 were 0.6 percent and 1.8 percent, respectively, of Middle East totals. The oil sector in Yemen is characterized by little government intervention and is instead dominated by large international oil companies, which manage exploration and production. Oil production began in 1987 in the Marib concession, held by a consortium of companies including Hunt, Exxon, and Yukong. In 1993 the second major block, Masila, operated by Canadian Occidental Petroleum (CanOxy), came on stream, giving a major boost to oil output growth (Table 1). As oil production continued to increase at an average annual rate of about 3 percent throughout the rest of the decade (Figure 1), Yemen's economy became highly oil-dependent. The share of oil in real GDP nearly doubled, from 10.7 percent in 1992 to 20.2 percent in 1999, and government crude oil export revenues as a share of GDP increased eightfold over the same period.

Inception and Evolution of Exploration Agreements

Although oil exploration had taken place in Yemen as early as in the late 1930s, it accelerated in the 1970s, when eight agreements were signed with oil companies to conduct exploration, mostly in the Hadramout and Tihama areas. Between 1982 and 1991 Yemen signed about ten additional exploration and production agreements,[4] including agreements for the five blocks currently producing oil: Marib, Masila, Jannah, Shabwah, and Ayad. The contracts in each case were fairly similar. Exploration commitments were specified,[5] in addition to cost oil percentages and profit-sharing ratios, and signing bonuses were granted in most cases.[6] The share of cost oil was usually around 30 percent, and profit sharing was on average about 20 percent for the company.[7]

Three agreements signed in the 1980s eventually led to oil discoveries, which were quite substantial in two cases.[8] The remaining agreements for the blocks producing oil today were signed in the early 1990s. By the mid-1990s foreign interest in the Yemeni oil sector had diminished, mainly because of the civil war and the relatively low success rate of previous explorations (primarily due to geological difficulties). As the government realized that, without additional foreign investment, oil production would decline in the near future, it began to offer better financial terms to interested oil companies and eased the terms of existing contracts on a case-by-case basis. A major change implemented in the contracts was one allowing the share of cost oil to be periodically revised in light of movements in world oil prices.

In 1995–96, to provide better incentives to oil companies investing in small fields, the Yemeni government renegotiated deals with Nimir Petroleum Company and CanOxy. The new financial terms allowed the oil companies to recover their initial exploration expenses over a shorter period.[9] For the

[4]See *Arab Oil and Gas Directory*, various issues; some information can also be found on the World Wide Web site of the Ministry of Oil and Mineral Resources (www.momr.gov.ye).

[5]For example, contracts specified which activities would be undertaken in the exploration phase, such as the numbers of wells to be drilled and the kind and amount of seismic data to be produced and analyzed. Funds committed in the exploration phase, generally on the order of tens of millions of dollars, were also stated.

[6]Cost oil is the amount recoverable by the operator per year to cover expenses during the appraisal and exploration period as well as operating costs.

[7]As an illustration, assume that production is at 100,000 b/d, the share of cost oil is 50 percent, and profit sharing is 20–80 in favor of the government. The company then receives 50,000 b/d as cost oil plus 20 percent of the remaining 50,000 b/d, or 10,000 b/d, as profit, while the government receives 40,000 b/d.

[8]The first was signed in September 1981 with the U.S. company Hunt Oil over a 16,890-square-kilometer area located in what was then North Yemen, in the onshore Tihama area (the Marib block). In addition to shares of cost oil and profit distribution, the terms of the agreement specified a 10 percent royalty to the government on the fraction of production in excess of 100,000 b/d. In September 1986 a consortium consisting of CanOxy and Athens-based Consolidated Contractors International Company was awarded two onshore tracts in the Masila region of South Yemen. These tracts, totaling 35,548 square kilometers, turned in the second most important oil findings in Yemen after Marib. In April 1987 the South Yemeni government awarded Total of France the 15,827-square-kilometer East Shabwa concession, located northeast of Aden. A consortium consisting of Total, Hunt Oil/Exxon, the Kuwait Foreign Petroleum Exploration Company (Kufpec), Mashinoimport, and Zarubezhgeologia signed an agreement in 1990 with the Yemeni Company for Investment in Oil and Mineral Resources for the exploration of Jannah, a tract of land in northern Yemen measuring 2,372 square kilometers, with a signature bonus of $6 million. The following year Nimir Petroleum Company (NPC) signed an exploration agreement for the Ayad block, also in northern Yemen, obtaining a much larger signature bonus of $27 million and a production bonus of $5 million at a rate of output exceeding 50,000 b/d. Oil had been found in the Ayad block earlier in the 1980s, but the company that held the concession at the time later relinquished it.

[9]In the revised agreement with CanOxy, for example, costs would be recovered out of 50 percent of crude oil produced instead of the previous 28 percent. The original 10 percent flat royalty rate was replaced with a sliding scale, rising from 3 percent on production up to 25,000 b/d to 10 percent on production exceeding 100,000 b/d. Under its revised agreement, NPC would collect 70 percent of revenue generated on production up to 25,000 b/d as cost oil (instead of the previous 24 percent). Once that allocation has been made, the company would pay the government 3 percent as a royalty, and the remaining profit would be split evenly between NPC and the government. Similarly, in early 2000 the government finalized amendments raising companies' profit share to the share in the production-sharing agreement with the Norwegian company DNO, which operates Howarim (Block 32).

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Table 1. Selected Economic Indicators, 1990–99

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
					(Change in percent)					
Production and prices										
Nominal GDP at market prices	41.2	18.6	27.0	23.8	28.4	67.1	43.7	21.5	0.4	24.3
Real GDP at market prices	. . .	–2.1	4.8	0.4	–3.6	7.9	2.9	8.1	5.3	3.8
Real non-oil GDP	. . .	–1.5	8.0	–0.1	–9.6	5.5	0.5	8.2	5.9	3.2
Real oil GDP	. . .	–5.7	–15.9	4.3	43.7	20.0	13.5	7.5	2.7	6.2
Consumer price index (annual average)	33.5	44.9	50.6	62.4	71.3	62.5	40.0	4.6	11.5	8.0
Crude export oil price (weighted average, US$ per barrel)	22.1	19.8	19.7	15.9	15.4	16.9	20.3	18.5	11.6	18.7
					(In percent of GDP)					
Government finance										
Total revenue and grants	19.8	23.1	16.1	14.9	12.8	19.5	35.9	32.8	26.4	31.8
Oil revenue	7.5	9.4	4.7	4.2	3.7	9.3	25.1	22.1	13.8	19.8
Non-oil revenue	11.2	12.6	11.1	10.5	8.9	9.8	10.5	10.1	12.2	11.1
Grants	1.1	1.0	0.3	0.1	0.3	0.3	0.3	0.6	0.4	0.9
Total expenditure	32.3	30.1	28.9	29.5	29.0	25.6	39.8	34.7	32.7	32.1
Current	23.6	26.1	25.5	26.0	26.4	22.5	33.2	27.9	26.6	26.5
Development	8.7	4.0	3.4	3.5	2.6	3.1	6.6	6.8	6.1	5.6
Overall balance including grants (cash basis)	–11.7	–5.6	–11.7	–13.9	–15.7	–5.2	0.6	–1.8	–7.9	–0.4
Overall balance excluding grants (commitment basis)	–13.6	–8.0	–13.1	–14.8	–16.4	–6.4	–4.2	–2.5	–6.7	–1.2
					(12-month change in percent of initial broad money)					
Monetary data										
Broad money	35.1	18.8	27.6	35.4	34.7	20.4	8.6	10.7	11.7	13.8
Credit to nongovernment sector	36.4	21.5	7.2	15.8	69.0	28.0	–29.4	46.6	54.2	15.0
Benchmark deposit interest rate (percent)	6.5	6.5	6.5	6.5	6.5	20.0	25.0	11.0	15.0	18.0
Velocity (non-oil GDP/M2)	1.5	1.5	1.5	1.4	1.2	1.7	1.9	2.0	2.2	2.1
					(In millions of U.S. dollars)					
External sector										
Exports, f.o.b.	1,384	1,197	1,095	1,167	1,824	1,937	2,263	2,274	1,501	2,466
Of which										
Crude oil	1,203	1,011	819	834	1,615	1,735	1,976	1,945	1,229	2,131
Imports, f.o.b.	–1,726	–1,897	–1,891	–2,087	–1,522	–1,948	–2,294	–2,407	–2,228	–2,440
Services (net)	–739	–661	–852	–917	–475	–411	–370	–470	–398	–489
Private remittances and transfers (net)	1,241	1,078	1,071	1,067	1,117	1,104	1,188	1,256	1,254	1,314
Capital account (net)	356	88	–36	74	–641	–876	–397	34	–154	11
Overall balance	–65	–803	–1,283	–1,008	–779	–38	–625	116	–463	320
					(In millions of U.S. dollars)					
Central bank own gross foreign reserves[2]	424	680	323	147	357	525	937	1,152	853	1,351
In months of imports[2]	2.8	4.2	2.2	0.9	2.9	3.1	4.6	5.3	4.2	6.0
As percent of base money	8.6	12.5	4.9	1.7	3.0	19.0	73.2	103.5	79.3	112.3
As percent of M2	6.8	9.2	3.4	1.2	2.1	12.5	48.8	53.7	41.7	62.7
Current account, including grants (in percent of GDP)	–3.1	–10.7	–13.2	–16.1	5.6	2.8	1.7	0.3	–3.7	2.9
Current account, excluding grants (in percent of GDP)	–4.4	–12.2	–13.8	–16.5	4.5	2.2	0.7	–1.0	–4.6	1.5
Debt service ratio, obligation basis[3]	46.7	91.3	89.1	80.8	46.8	42.1	31.9	12.6	17.0	10.5
Official external debt, before rescheduling[3]	9,915	10,323	10,541	10,735	10,876	11,017	11,135	5,359	5,373	5,490
(In percent of GDP)	105.7	129.5	127.9	138.5	167.1	170.1	173.2	81.2	85.3	80.4
Terms of trade (1996=100)	122.3	113.0	107.4	91.8	85.5	85.3	100.0	100.7	69.5	114.1
Exchange rate (free market, eop) (YRls/US$)	17.5	29.7	42.7	67.8	101.0	127.1	126.9	130.5	141.7	159.7
Real effective exchange rate (1996=100)[4]	. . .	. . .	. . .	. . .	. . .	76.2	100.0	109.7	119.5	107.1

Sources: Yemeni authorities; IMF staff estimates and projections.

[1]EBS/99/98 (6/15/99).

[2]Gross reserves minus commercial bank foreign exchange deposits held with the central bank. Imports are for the current year, and exclude oil and gas sector imports. Short-term debt by remaining maturity; excludes private debt for which data is not available.

[3] Public- and publicly guaranteed debt including central bank foreign liabilities. Debt service ratios in percent of exports of goods and services and reflecting reschedulings in 1996 and 1997 under the auspices of the Paris Club.

[4]Based on the free market rate.

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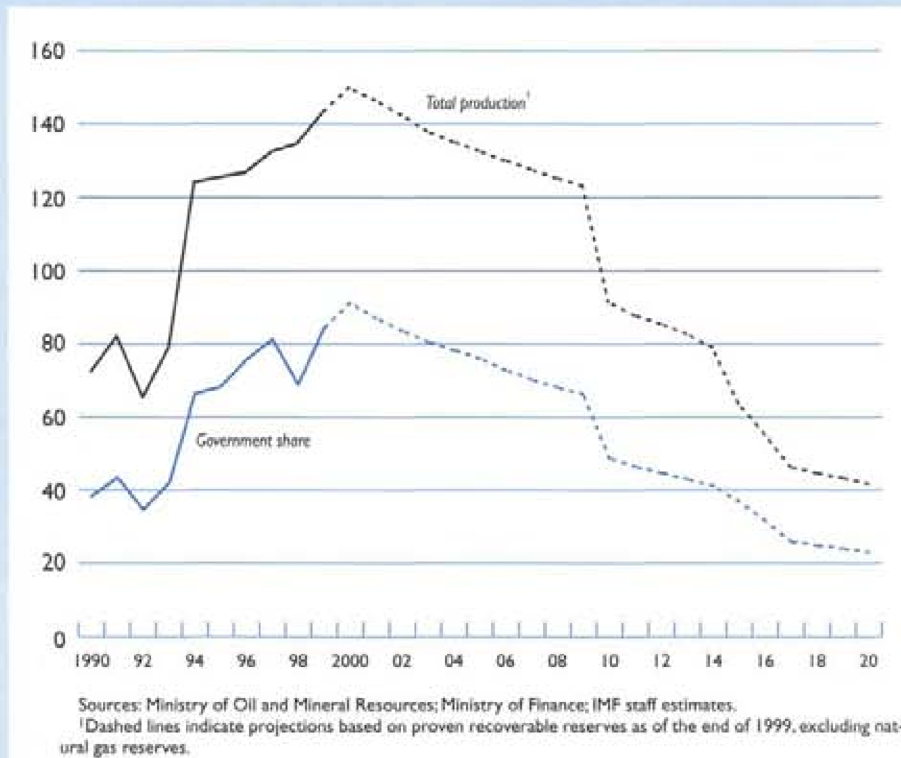
Figure 1. Actual and Projected Crude Oil Production and Government Share
(In millions of barrels a year)



Sources: Ministry of Oil and Mineral Resources; Ministry of Finance; IMF staff estimates.
[1]Dashed lines indicate projections based on proven recoverable reserves as of the end of 1999, excluding natural gas reserves.

new agreements signed in 1996 and onward, the starting point for the sliding scale of the profit-sharing formula was increased from 20 percent to 30 percent, and the share of cost oil was increased from about 30 percent to between 50 and 75 percent. That share was to be decreased, however, once the oil company had recovered its initial costs and entered into the operational phase. As a result of these better terms, the number of new companies in the oil sector increased significantly. During 1996–99, 20 exploration blocks were awarded (see Statistical Appendix Table A.11). As of February 2000 more than 26 oil companies were conducting exploration operations in Yemen on a total of 30 blocks. Most had finished their seismic surveys and were drilling exploration wells. More recently, the authorities have moved away from their traditional approach of negotiating concessions on a bilateral basis and embarked in late 1999 on road shows in London and Houston, inviting a new round of bids for the development of seven blocks. About 15 companies seemed interested, but none was ready to make a formal commitment, possibly because they were awaiting important discoveries in the current exploration operations.

Production Prospects

According to the Petroleum Exploration and Production Board, Yemen's remaining recoverable reserves of oil stood at 2.8 billion barrels at the end of April 2000, for a production horizon of about 18 years at the current level of output.[10] Production increased from an average of 389,000 b/d in 1999 to about 434,000 b/d on average in 2000. The main increase came from the Jannah and Shabwah blocks, where large investments in infrastructure are taking place. Unless relatively large new fields come on stream, however, oil production is expected to start declining from 2001 onward at an approximate aver-

[10]Of these reserves, 413 million barrels are located in the Marib block, 1,410 million in the Masila block, 181 million in the Shabwah block, 281 million in the Jannah block, 107 million in the Ayad block, and 25 million in the Howarim block.

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age rate of 3 percent a year, as fields in both Marib and Masila start drying up.[11]

Refining

Yemen has two state-owned refineries, in Aden and in Marib. The refinery in Aden was constructed in 1954 by British Petroleum and later nationalized by the PDRY. It is currently entirely state-owned and operated by the Aden Refinery Company (ARC). Initial capacity was about 150,000 to 170,000 b/d, but obsolescence of its equipment and other inefficiencies had reduced the refinery's capacity to about 110,000 b/d by 1990, and it sustained further significant damage during the civil war in 1994. The facility refines only about 70,000 b/d currently, producing an array of petroleum products (including gasoline, fuel oil, kerosene, and diesel fuel) mainly for the domestic market. The Marib refinery was constructed much later, in 1986, specifically to refine oil extracted in that block. Operated by Yemen Hunt Oil Company, its capacity is a much lower 10,000 b/d, and it mostly supplies the local market.

Under pricing arrangements introduced in early 1999, refineries pay the international price for crude oil delivered out of the government's share in production (through the Yemen Oil and Gas Corporation) and charge the Yemen Petroleum Corporation (YPC) international prices for refined products.[12] The Ministry of Finance transfers to the YPC the difference between its payments to the refineries and its sales (at administratively fixed prices for most products).

The renovation of the Aden refinery has been plagued with problems, including disagreements over how much capacity to restore. In May 1998 the Council of Ministers approved, in principle, the privatization of the refinery, and in January 2000 preparations for its privatization began.

The Role of Crude Oil in the Yemeni Economy

The bulk of Yemeni crude oil production has always been exported, and oil accounted for 80 to 90 percent of total exports over the period 1994–99 (Figure 2). Companies export their entire share, which averaged about 43 percent of production in the second half of the 1990s; the government sells about two-thirds of its share abroad. The second half of 1999 was an exceptionally favorable period for the Yemeni government, as both the government's oil share and oil prices increased; the rise in its share was mainly due to the high oil prices, which allowed the government to negotiate cost oil shares that were substantially lower than usual.

Over the course of the decade, Yemen's dependence on oil to generate exports and budget revenues increased quite sharply, both in absolute terms and compared with some other nonmajor oil-producing countries (Figure 2). By the second half of the 1990s, Yemen's dependence on oil exceeded, for example, that of the Syrian Arab Republic, and it was higher than Egypt's throughout the decade.[13] A simple simulation exercise highlights the extent to which Yemen has become more vulnerable to oil price movements. Table 2 shows the effect of a unit decrease in the export price of crude oil on government and export revenues for the countries in Figure 2 and for the Islamic Republic of Iran and for Saudi Arabia, assuming unchanged production levels and profit-sharing

[11]Masila is currently the country's most productive block. Production there started in July 1993 at an initial rate of 40,000 b/d and by 1999 reached 207,000 b/d on average. CanOxy reported that operating costs of the Masila fields were under $1 a barrel in 1999; it also invested about $60 million in continued field development for that year. However, if no new discoveries are made, Masila's production could begin to decline in 2001 by an average of 9,000 b/d a year. Marib, the country's second-largest and oldest production field, peaked in 1994 at 185,000 b/d; average production has since declined at a rate of about 14,000 b/d a year. This trend decline is expected to continue over the medium term, albeit at a slower pace. Without further investment for secondary or tertiary extraction, Marib's output could decline to levels below 40,000 b/d by 2005. Jannah is the most promising block of those that emerged in the late 1990s. Production started in 1996 at about 4,000 b/d and rapidly rose to reach 48,000 b/d in 1999. Output rose further, to about 68,000 b/d in 2001, and to keep on increasing annually by 5,000 to 6,000 b/d for the near term. Shabwa came on stream in December 1997, and its output is expected to reach 27,000 b/d in 2000, from a current level of 17,000 to 18,000 b/d. This increase is owed to the development of two recently discovered fields on its tract, and this new level should be sustained in the near term. Some production took place in the Ayad block from 1988 to early 1990, when Technoexport operated the block. NPC took over in 1991 and resumed production in 1992 at a low level of 5,000 b/d. The civil war in Yemen caused the suspension of NPC's operations, and production (at a low rate of 1,000 b/d) resumed only in 1997, after amendment of the terms of agreement with the government. Given the difficult geological conditions in the Ayad tract, production is expected to decline steadily over the near term. Howarim, Block 32, is the sixth and latest block to produce oil in Yemen. As previously noted, it is operated by the Norwegian company DNO and came on stream in early 2001, with initial production from two wells in the Tasour field of about 5,000 to 7,000 b/d. Other exploration blocks (S1, S2, 9, and 15) yielded oil that added about 380 million barrels to recoverable reserves; production could start within a couple of years.

[12]The formulas used by the two refineries differ. YPC pays the Marib refinery average monthly prices quoted on the Mediterranean market; however, it pays the ARC daily prices quoted by Platts Marketscan News from the Rotterdam market, plus a premium of $17 a ton. The premium supposedly reflects remuneration for shipping services but may also include an explicit subsidy to compensate for the refinery's inefficiency.

[13]Data on government crude oil revenues for Egypt (measured by crude oil receipts of the state petroleum company) were not available for fiscal years 1989/90, 1991/92, and 1992/93 (the data reported in Figure 2 correspond to fiscal years). For both Syria and Yemen, the fiscal year is the same as the calendar year; for Egypt, 1990 refers to data for fiscal year 1989/90, and so on.

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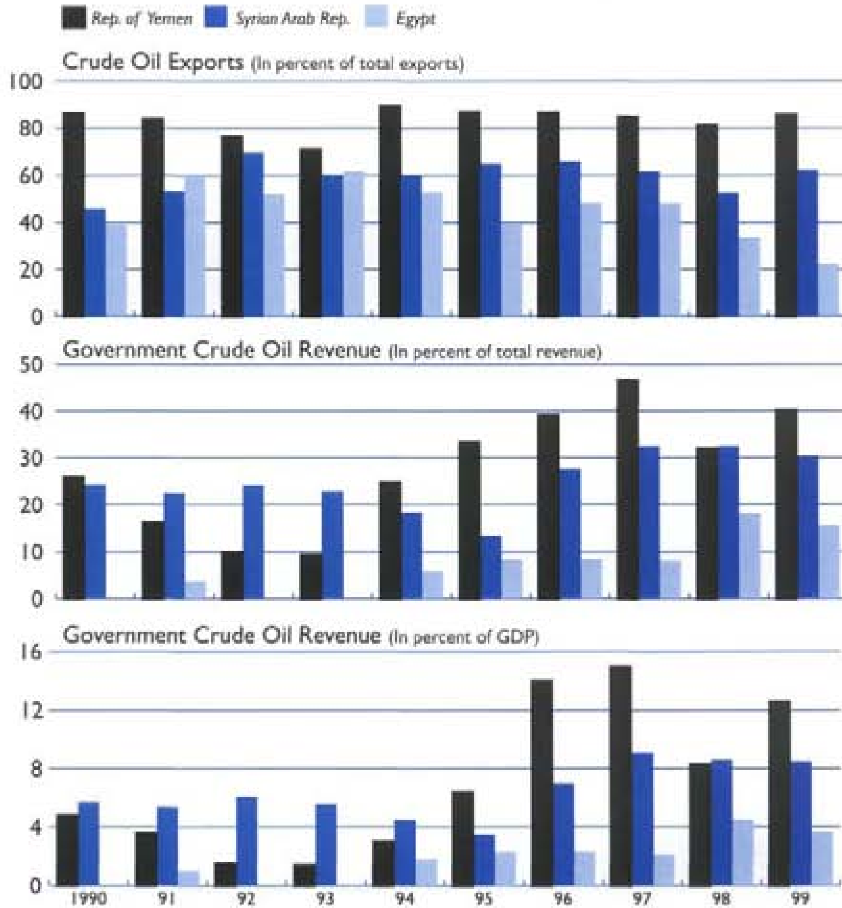
Figure 2. Republic of Yemen and Selected Comparators: Crude Oil Exports and Revenue[1]



Sources: Ministry of Oil and Mineral Resources; IMF staff estimates.
[1]Comparator countries are nonmajor oil exporters in the Middle East region.

arrangements for each year. For example, a one-dollar drop in the oil price in 1999 would have resulted in a drop in budget revenue of 0.68 percent of GDP in Yemen, more than in any other country in the sample except Saudi Arabia. It would have reduced exports by 1.67 percent of GDP, considerably more than for any of the other sample countries.

More generally, Table 3 summarizes key volatility measures of oil-related macroeconomic aggregates for Yemen and the other countries in Table 2, and for Jordan, a non-oil exporter in the region. Terms-of-trade volatility in the 1990s was much higher for the oil exporters than for Jordan; the difference is clearly due to volatility in oil prices. Yemen's terms-of-trade volatility was similar to that of other oil exporters in the region but was associated with higher-than-average income volatility. Indeed, in Yemen as in Iran, the volatility of GDP is not much below that of the terms of trade; for Saudi Arabia and Egypt, in contrast, GDP is far less volatile than the terms of trade.[14] Yemen's terms-of-trade variability is also associated with relatively higher volatility of government rev-

[14]Unstable correlation patterns between trade price indices and output have often been observed in data for both developed and developing countries. For example, see Backus and Crucini (2000).

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Table 2. Sensitivity to Oil Price Changes, 1990–99
(In percent of GDP)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
(1) Effect of US$1 decrease in the oil export price on budget revenues[1]										
Egypt	n.a.	–0.05	n.a.	n.a.	–0.12	–0.16	–0.14	–0.11	–0.31	–0.36
Iran	–0.45	–0.44	–0.46	–1.51	–1.09	–0.98	–0.81	–0.81	–0.65	–0.67
Saudi Arabia	–1.46	–1.74	–1.7	–1.71	–1.54	–1.43	–1.32	–1.57	–1.4	–1.12
Syria	–0.26	–0.3	–0.34	–0.37	–0.28	–0.21	–0.37	–0.5	–0.76	–0.53
Yemen	–0.23	–0.18	–0.08	–0.09	–0.2	–0.38	–0.69	–0.81	–0.71	–0.68
(2) Effect of US$1 decrease in the oil export price on exports[1]										
Egypt	–0.18	–0.31	–0.26	–0.28	–0.23	–0.22	–0.21	–0.18	–0.15	–0.11
Iran	–0.98	–0.78	–0.75	–1.12	–1.23	–0.96	–0.85	–0.84	–0.84	–0.74
Saudi Arabia	–1.58	–1.88	–1.96	–2.33	–2.3	–2.02	–1.58	–1.54	–1.82	–1.48
Syria	–0.72	–0.78	–0.92	–0.93	–0.81	–0.91	–0.83	–0.86	–0.88	–0.83
Yemen	–0.66	–0.89	–0.75	–1.12	–2.9	–2.55	–1.78	–1.59	–1.62	–1.67

Source: IMF staff estimates.
[1]Assumes unchanged production and sharing patterns between the government and oil companies. Because of different classifications for each country, the results should only be interpreted as broadly indicative of trends.

enue from oil than in Syria and Egypt, and high oil price variability could therefore have a greater negative impact on Yemen. In part, this reflects the fact that, under the cost-sharing agreements with the oil companies, oil revenue accruing to the government does not change linearly with oil prices. The lower the oil price, the more oil is needed to pay for oil production costs, and thus less oil is available to the government. Hence falling oil prices also cause a fall in oil volumes received by the government. The opposite holds true for rising oil prices.

Fluctuations in real gross domestic income (RGDI) are another way to capture the impact of oil price volatility on the Yemeni economy, adjusting fluctuations in real gross domestic product (RGDP) for terms-of-trade effects (see IMF, 2000):

$$RGDI = RGDP + \textit{terms-of-trade effect}.$$

The terms-of-trade effect adjusts the volume of production, measured by RGDP, for changes in the purchasing power of income generated by that production.[15] Simple calculations show that in 1990–99 the volatility of RGDI reached 0.23, or more than double RGDP volatility. In 1998, following the large drop in oil prices, the 30 percent decline in the terms of trade for Yemen was associated with a 15 percent decline in RGDI. The 61 percent improvement in the terms of trade the following year led to a 59 percent increase in RGDI (changes in RGDP for these two years were 5.3 percent and 3.8 percent, respectively).

Recent episodes illustrate Yemen's growing budgetary vulnerability. The collapse in oil prices in 1998 was accompanied by a dramatic decline in government export revenue from 15 percent of GDP in 1997 to 8.5 percent in 1998. In that instance, because of rising cost oil shares, the price decline was aggravated by a 17 percent reduction in the government share of the total volume of oil production. By the same token, in 1999, with the rapid rise in oil prices and an increasing government share in oil production, oil export revenue reached 12.7 percent of GDP. The 1998–99 swing in prices also pointed to costs in adjusting expenditure. Given Yemen's limited access to foreign financing, avoiding inflationary deficit financing requires sharp adjustments to expenditure in times of low oil prices. Yet much expenditure is already predetermined by long-term decisions and cannot be cut at short notice. In 1998 the government coped with the unexpected revenue shortfall by stopping development projects on an ad hoc basis, not always consistent with spending priorities. Moreover, wage increases were delayed and granted only after the recovery of oil prices in 1999. Although difficult to quantify, the economy likely suffered costs, for example from the unavailability of unfinished schools and infrastructure as well as more indirect effects on investment and saving.

[15]In other words, the terms-of-trade effect = $NX/P - (X/Px - M/Pm)$, where NX is the nominal trade balance, P is a price deflator for the trade balance (the consumer price index is used here as a proxy), X and M are nominal exports and imports, respectively, and Px and Pm are their respective price deflators.

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Table 3. Oil-Related Volatility in the Economy, Compared with Other Oil Exporters in the Region
(In millions of Yemeni Rials)

	Crude Export Price[1]	Terms of Trade[1]	Oil Exports, Share of GDP[2]	Budget Revenues from Crude Oil, Share of GDP[2]	Real GDP[1]
			(Major oil exporters)		
Saudi Arabia	0.17	0.16	3.7	4.7	0.05
Iran	0.18	0.2	3.7	5.5	0.12
			(Other oil exporters)		
Egypt	0.2	0.31	1.4	1.2	0.1
Syria	0.17	0.1	1.9	1.9	0.16
Yemen	0.18	0.17	11.6	5.2	0.1
			(Non-oil exporters)		
Jordan	...	0.07	...	...	0.15

Source: IMF staff estimates.
[1]The volatility for crude export price, terms of trade, and real GDP was calculated as the standard deviation of the natural logarithms of the corresponding annual values over the period 1990–99.
[2]The volatility for the GDP shares of oil exports and budget oil revenues was calculated as the standard deviation of the corresponding annual values.

Prospects for Gas Production

Yemen's proven natural gas reserves are about 15 trillion cubic feet,[16] or roughly 1 percent of the Middle East total. So far, however, few facilities for recovering and utilizing gas associated with oil-producing wells have been installed. Liquefied petroleum gas (LPG) equivalent in energy content to about 30,000 b/d of crude oil is currently produced in the Marib block each year, fully covering domestic consumption.

After the civil war, the government signed a joint contract establishing the Yemen Liquefied Natural Gas Company, a partnership of Hunt, Exxon, Yukong, and Total of France with the public General Gas Corporation of Yemen, which retained 26 percent of the venture. The project stipulates the construction of a two-train liquefaction plant with a capacity of 5.3 million tons per year, and facilities for supplying the liquefied gas to local power stations and industrial factories. The initial expenditure is estimated at about $2.6 billion but could reach $5 billion if the cost of shipping the LPG to foreign markets is factored in. In addition, a gas line with a capacity of 100 million to 250 million cubic feet a day is to be constructed to supply the capital, Sana'a, with gas for local consumption, and the maximum possible volume of gas is to be extracted for both domestic consumption and export. The agreement between the government and the foreign companies with holdings in the project is set to expire 25 years after the start of exports.

The launching of the LPG project has been delayed so far by a lack of secured markets in which to sell the gas. The East Asian crisis in 1997–98 temporarily dimmed the prospects of finding markets for LPG in that region. Even with the upturn of the economic situation in East Asia, however, Yemen faces strong competition from Oman and Qatar, which already have LPG infrastructure in place, with room to expand existing plants, if necessary. However, despite the fact that no definite gas sales contracts have yet been signed, Yemen LPG recently decided to invite bids for the execution of the project (including the plant, pipeline, and long-lead items) starting in 2001. Three years would be needed to complete construction of the plant.

[16]About 13.5 trillion cubic feet in the form of associated and nonassociated gas is concentrated in the Marib block; the rest is found in the Jannah block. Recent discoveries in Block S1 could add some 2 trillion cubic feet to this stock.

External Debt

Of the many burdens inherited by the unified Yemen, the crushing external debt was among the

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heaviest. By the end of 1990, unified Yemen's medium- and long-term external public and publicly guaranteed debt amounted to an estimated $9.9 billion (equivalent to 106 percent of GDP; Table 4). Of this, $6.4 billion (valued at the official exchange rate) was owed to member countries of the former Council of Mutual Economic Assistance (CMEA), with Russia accounting for 97 percent.[17] Yemen's debt-service obligations for 1990 were estimated at $696 million (equivalent to 47 percent of exports of goods and nonfactor services) on a commitment basis. However, actual debt-service payments were on the order of $426 million, as debt service to the former CMEA and certain Middle Eastern countries and financial institutions had been in abeyance since mid-1990.

In 1991 the government began to explore the possibilities for normalizing the arrears situation and obtaining debt relief. Following the temporary interruptions in 1990, debt-service payments to all regional multilateral institutions were resumed. The government's policy was to fully service its contractual obligations to international multilateral creditors and to give debt-servicing priority to those bilateral and regional multilateral creditors who continued to provide resources for development.[18] For the former CMEA creditors, the policy was to seek a write-off of all obligations relating to the military debt of the former PDRY and a rescheduling of principal and a write-off of interest obligations on civilian debt.[19]

In 1993 Germany forgave Yemen's $46 million debt to the former German Democratic Republic, but there were no negotiations with Middle Eastern or other former CMEA countries, except Russia, to seek ways to address Yemen's external indebtedness. Although an agreement was reached with the Russian authorities in early 1993 on the magnitude of the ruble stock of debt, differences persisted over the currency and exchange rate to be used in valuing and servicing the debt. In late 1994 Russia offered to cancel Yemen's debt in return for a cash payment equivalent to 10 percent of the stock of debt outstanding plus the accumulated interest arrears, valued at the exchange rate at the time the debt was contracted. Although the Yemeni government wished to resolve the Russian debt issue, the financial resources available at the time or in prospect were not sufficient to meet those terms.

In 1994, all debt service to multilateral creditors became current, but shortfalls continued in debt-service payments to bilateral creditors.[20] By the end of 1995, Yemen's public and publicly guaranteed external debt (including capitalized interest) had risen to about $11.0 billion, or 170 percent of GDP, of which $6.8 billion was owed to Russia. Over the same period, the stock of official external arrears reached an estimated $6.4 billion, of which $4.8 billion consisted of arrears to Russia.

In February 1996 the government requested debt relief from its Paris Club bilateral creditors and intensified its efforts to reach an agreement on debt relief with Russia and other bilateral official and commercial creditors. On September 24, 1996, the Paris Club creditors reached an agreement with Yemen on a flow rescheduling on Naples terms.[21] The debt relief applied to medium- and long-term public and publicly guaranteed external debt contracted before the January 1, 1993, cutoff date and entailed a 67 percent reduction in the net present value of consolidated debt, encompassing outstanding debt-service arrears as of the end of August 1996 and obligations falling due between September 1, 1996, and June 30, 1997.[22] This provided debt-service relief in the amount of $93 million for the remaining months of 1996. The participating creditor countries also agreed in principle to consider the matter of Yemen's debt-service payments falling due after June 30, 1997, and relating to loans contracted before January 1, 1993.

Following the September 1996 Paris Club meeting, the Yemeni authorities communicated to all other bilateral creditors requests to negotiate debt relief on terms at least as favorable as those granted by the Paris Club creditors. In particular, intense direct contacts with Russia were initiated in late 1996.[23]

On September 17, 1997, Russia reached an agreement with the Paris Club creditors on its participation in the Paris Club and, in line with the provisions of the agreement, agreed to provide debt relief to Yemen on Paris Club terms. The agreement applied to the totality of Russian claims on Yemen, including

[17]The debt of the former PDRY to the former Soviet Union was inherited by the unified Yemen and Russia, respectively.

[18]Given the difficult external debt position, the government's external borrowing policy was to avoid new borrowing on commercial terms, to carefully consider any new concessional borrowing, and to provide government guarantees only on supplier credits for food imports.

[19]Debt obligations to the former CMEA creditors were viewed largely as "political" rather than "economic" debt.

[20]External debt-service obligations during 1994–95 were estimated at $1.8 billion on a commitment basis, but only $205 million was paid.

[21]The participating creditor countries were Denmark, France, Germany, Italy, Japan, the Netherlands, the United Kingdom, and the United States.

[22]The 1996 agreement did not include late interest; by the end of 1996 this amounted to $542 million, 90 percent of which was owed to Russia.

[23]By the end of 1996, the stock of Yemen's external debt stood at $11.1 billion, or 173 percent of GDP, and the stock of external arrears reached $7.0 billion. Debt to Russia, evaluated at the loan contracting exchange rate of 0.6 ruble to the dollar, accounted for 62 percent of Yemen's total debt and 77 percent of its amortization and interest arrears.

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Table 4. Balance of Payments, 1990–99

(In millions of U.S. dollars)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Current account	–292	–849	–1,091	–1,248	366	183	106	23	–230	195
Current account excluding oil company transactions	–370	–669	–516	–520	375	–135	–143	–153	–541	–193
Goods and services	–1,080	–1,361	–1,648	–1,837	–173	–422	–401	–602	–1,124	–464
Trade balance	–341	–700	–796	–920	302	–11	–31	–133	–727	25
Exports, f.o.b.	1,384	1,197	1,095	1,167	1,824	1,937	2,263	2,274	1,501	2,464
Of which										
Crude oil	1,203	1,011	819	834	1,615	1,735	1,976	1,945	1,229	2,131
Imports, c.i.f.	–1,726	–1,897	–1,891	–2,087	–1,522	–1,948	–2,294	–2,407	–2,228	–2,440
Of which										
Food	–554	–550	–489	–499	–427	–687	–915	–916	–787	–807
Of which										
Wheat and flour imports	...	...	...	...	–274	–433	–617	–484	–374	–378
Services, net	–739	–661	–852	–917	–475	–411	–370	–470	–398	–489
Income	–454	–566	–514	–478	–579	–499	–682	–631	–359	–655
Of which										
Oil company profits	–284	–290	–265	–244	–393	–324	–541	–554	–301	–599
Interest income, net	22	25	17	6	4	16	29	47	40	43
Current transfers	1,241	1,078	1,071	1,067	1,117	1,104	1,188	1,256	1,254	1,314
Of which										
Workers' remittances, net	1,071	841	989	1,013	1,043	1,064	1,123	1,157	1,191	1,223
Capital and financial account	356	88	–36	74	–641	–876	–397	34	–207	–74
Financial account excluding oil company transactions	84	–390	–754	–829	–657	–626	–123	109	–11	364
Oil sector direct investment, net	–131	282	718	903	16	–218	–60	–138	–267	–319
Trade credits, net	...	–12	12	–51	29	36	104	–16	–117	–119
Medium- and long-term loans, net	84	–678	–762	–771	–685	–694	–521	–66	–64	27
Private capital, net	...	...	...	...	...	...	80	255	240	337
Errors and omissions[1]	–129	–42	–156	165	–504	655	–334	60	–27	199
Financing	65	803	1,283	1,008	779	38	625	–116	463	–320
Net reserves, official and banks (increase –)	–205	–158	380	99	–79	–713	–37	–297	317	–459
Official net reserves	44	–272	332	144	–149	–260	–294	–27	330	–467
Commercial banks net reserves	–249	114	48	–45	69	–453	257	–270	–13	8
Memorandum items:										
Current account including grants (percent of GDP)	–3.1	–10.7	–13.2	–16.1	5.6	2.8	1.7	0.3	–3.7	2.9
Of which										
Official grants (percent of GDP)	1.2	1.6	0.5	0.4	1.1	0.6	0.9	1.4	0.9	1.3
Central bank own gross foreign reserves[3]	424	680	323	147	357	525	937	1,152	853	1,351
(Months of imports)[4]	2.8	4.2	2.2	0.9	2.9	3.1	4.6	5.3	4.2	6.0
Official external debt[5]	9,915	10,323	10,541	10,735	10,876	11,017	11,135	5,359	5,373	5,490
Official external debt (percent of GDP)[5]	105.7	129.5	127.9	138.5	167.1	170.1	173.2	81.2	85.3	80.4
Debt service (percent of exports of goods and services)[5]										
Obligation basis	46.7	91.3	89.1	80.8	46.8	42.1	31.9	12.6	17.0	10.5
Actual	28.6	17.9	17.2	13.2	3.3	6.6	8.7	10.3	14.0	8.3
Change in outstanding Fund credit (US$ millions), increase (+)	...	...	...	...	...	...	120.6	129.8	84.5	73.5

Sources: Central Bank of Yemen; and IMF staff estimates and projections.

[1]For the period until 1996, includes private capital.

[2]Represents full settlement of overdue obligations to non-Paris Club official bilateral creditors under discussion to ensure comparable treatment and commercial debt subject to IDA debt buyback.

[3]Includes central bank SDR holdings, foreign exchange held abroad, foreign securities, gold, silver, and foreign currencies, excludes commercial bank required foreign exchange reserves with the central bank against their foreign currency deposits.

[4]Imports are c.i.f. for current year and exclude oil sector imports.

[5]Public- and publicly guaranteed debt including central bank foreign liabilities. Debt and debt service reflect the 1996 and 1997 Paris Club reschedulings, including the 80 percent upfront discount provided by the Russian Federation.

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capitalized interest. Also, for purposes of treatment within the Paris Club, the agreement entailed an 80 percent upfront discount to be applied on the date of signature of an Agreed Minute.[24] The Agreed Minute negotiated in November 1997 between Yemen and its Paris Club creditors (including Russia) provided a 67 percent reduction (in net present value terms) of consolidated public and publicly guaranteed external debt contracted before January 1, 1993, and encompassing outstanding debt-service arrears as of the end of October 1997 (including late interest); principal due from November 1, 1997, up to October 31, 2000; and interest obligations (excluding late interest) falling due from July 1, 1999, to October 31, 2000.[25] This provided immediate debt relief in the amount of $6.0 billion, of which $5.9 billion was for arrears reduction.

In addition, the authorities requested assistance under the IDA Debt Reduction Facility in executing buybacks of the remaining commercial debt, which had been in default since 1991. Yemen's total commercial debt eligible for the IDA facility amounted to $695 million, of which $415 million consisted of principal and the rest of interest arrears. Of the principal, about $342 million was owed to Russian creditors and the rest to creditors from 51 other countries. Under the proposed buyback operation, all interest arrears were to be forgiven. The principal arrears were to be bought back at a fixed price after an initial reduction of 80 percent was applied to the stock of Russian commercial debt in line with the provisions of the September 17, 1997, agreement on Russia's participation in the Paris Club.[26] A grant in the amount of $15.1 million was approved in November 1999, and a buyback offer of 10 cents on the dollar of outstanding principal was launched.[27]

The multiyear debt relief provided under the 1997 Paris Club rescheduling substantially reduced Yemen's external debt burden. Total official external debt declined from $11.1 billion (173 percent of GDP) at the end of 1996 to $5.5 billion (80 percent of GDP) by the end of 1999, and the stock of amortization and interest arrears was reduced from $7.0 billion to $1.2 billion.[28] Over the same period, external debt-service obligations declined from 32 percent of exports of goods and nonfactor services to 11 percent.

In early 2000 the government undertook a debt sustainability analysis in collaboration with IMF and World Bank staffs. The analysis was based on the stock of public and publicly guaranteed external debt outstanding as of the end of 1999 and assumed full use of traditional debt relief mechanisms, in particular a stock-of-debt operation on Naples terms in the near future. The results indicate that Yemen's external debt position would remain sustainable over the medium term, with the stock of debt and the ratio of debt-service payments to exports of goods and nonfactor services projected to decline further (after taking into account expected new borrowing), to $5.4 billion (64 percent of GDP) and 7.8 percent, respectively, by 2005. The analysis also indicated that Yemen would not be eligible for special assistance under the enhanced Highly Indebted Poor Countries Initiative.

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[24]Determination of the rate of discount was based on the fact that Yemen is an IDA-only country (that is, it is eligible for World Bank Group borrowing only from that organization's concessional lending affiliate, the International Development Association), for which Russia was the largest military creditor among the Paris Club creditors. Russia's agreement to the discount was based on the official Soviet Gosbank exchange rate of 0.6 ruble to the dollar and a conversion rate of the transferable ruble (in which the original claims were denominated) of 1 ruble to the dollar.

[25]As of the end of 1999, the bilateral agreements implementing the Agreed Minute had been signed with all Paris Club creditors except France.

[26]This ensured comparable treatment with the official debts, included in the Paris Club agreement, owed by the government of Yemen to the Russian government. As a consequence, the effective buyback price for the "Russian debt" component of this operation was 2 cents on the dollar of the principal amount of eligible debt.

[27]Of this amount, $1 million was intended for incidental costs related to closing the operation, auditing the records, and protecting against exchange rate fluctuations.

[28]Implementation of the commercial debt buyback operation would further reduce the stock of external debt-service arrears to $760 million, which represents arrears to non–Paris Club bilateral creditors from whom the Yemeni authorities have requested debt relief on terms comparable with those obtained from the Paris Club.

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