

A NEW (OLD) FISCAL RULE FOR NON-RENEWABLE RESOURCE REVENUE IN ALBERTA

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Executive Summary

Alberta's government finances are once again in a perilous state with ongoing deficits, mounting debt and near record levels of spending. One of the greatest contributors to Alberta's fiscal instability is the provincial government's treatment of non-renewable resource revenue in the budget. With many expecting a rebound in the energy sector, now is the time to stabilize this volatile source of revenue.

Alberta's non-renewable resource revenue (NRR), adjusted for inflation, has ranged from as low as \$1.6 billion in 1970/71 to as high as \$19.0 billion in 2005/06. This volatility is reflected in NRR as a share of provincial revenue, which has been as high as 77.4% (1979/80) and as a low as 6.5% (2015/16). NRR is expected to be just 4.7% of total revenue in 2020/21—its lowest on record.

Despite this volatility, the Alberta government normally includes all revenue from non-renewable resources in its budget. In times of high NRR, the provincial government faces pressure to increase spending, which is premised on continuing high NRR. Consider that when NRR started increasing in the late 1990s, the province increased per-person spending (adjusted for inflation) from \$8,012 in 1999/00 to \$12,740 by 2008/09, an increase of 59.0%. When the inevitable happens and non-renewable resource revenue declines, the province faces spending levels that are unsustainable without large-scale deficits and mounting debt. Since 2009/10, amid a decade-long, general decline in NRR, the province ran a deficit in every year except 2013/14 and recorded a total accumulated deficit of \$64.3 billion (up to 2019/20). This cycle of public-finance boom and bust has repeated itself more than once.

Lessons on improving the rules governing the treatment of non-renewable resource revenue can be drawn from Alberta's own history as well as the performance of the Alaska Permanent Fund. The first lesson is that a portion of NRR should be saved. Part of the province's problem is that it effectively liquidates its non-renewable resource assets by using all of the NRR—by its nature one-time revenue—in general revenues to finance ongoing spending. In 1976/77, the province required that 30% of NRR be saved in the Heritage Fund. The problem with the province's initial approach was that this requirement to save a portion of NRR was a statutory law, which subsequent legislatures could easily change, and did. Following a decline in NRR in 1982/83, the government reduced the rate to 15%. Following a second collapse of oil prices in 1986/87, the province eliminated the requirement to save any portion of NRR. Overall, no contributions were made to the Heritage Fund in 30 of the 44 years of its existence and the province has deposited just 4.9% of total NRR to the fund over its lifetime.

The Alaska Permanent Fund provides important insights. Alaska requires at least 25% of all mineral revenue be deposited annually based on a constitutional rule, which is more difficult to change than a statutory rule and more robust over time. The implications of Alaska's approach for Alberta are significant. Consider that Alberta's Heritage

Fund could have a balance of \$91.6 billion as of 2019/20 instead of the actual \$16.2 billion had it followed rules similar to those used in Alaska. The first step in achieving a sounder approach to NRR is requiring a portion to be saved each year in the Heritage Fund.

Contributions to the Heritage Fund alone, however, do not change the volatility of non-renewable resource revenue in the provincial budget. To address this volatility, the provincial government has experimented with a number of mechanisms. One of the most effective was the Alberta Sustainability Fund (ASF) introduced in 2003 but eliminated in 2013. The idea behind the ASF was to save a portion of NRR during times of higher NRR so that it could be drawn on during times of low revenue from non-renewable resources, thus stabilizing the level of NRR included in the budget. Again, the statutory nature of the the ASF, however, meant that the rules guiding the fund were easily changed, ignored, and eventually eliminated.

A renewed Alberta Sustainability Fund is recommended based on a stabilized level of NRR of \$2.3 billion (adjusted by inflation annually), which is the ten-year average of NRR between 1990/91 and 1999/00. More important than the specific stabilized amount of NRR, however, is the principal of selecting a stable amount of NRR for the budget to be maintained using a fund that is financed during times of high NRR and drawn upon during periods of low NRR. Once the ASF is fully funded, any additional NRR would be contributed to the Heritage Fund.

The new rules governing the Heritage Fund and the new Alberta Sustainability Fund should be constitutional in nature to make them more difficult to change in the future. To achieve this, the province would first present the ideas to the public through a referendum—a procedure that in itself provides value by educating Albertans on the benefits of such an approach and garnering public support. Assuming the proposal is passed, the Alberta government would then pass legislation recognizing the rules. This legislation would then be presented to the federal House of Commons and Senate for recognition, resulting in a change pertaining to Alberta in the national Constitution.

The combination of rules requiring a share of NRR to be saved in the Heritage Fund and a predictable level of NRR supported by a sustainability fund would provide a more stable framework for Alberta's treatment of non-renewable resource revenue and temper its fiscal booms and busts.

Introduction

For decades, non-renewable resource revenue has created volatility in Alberta's finances (Kneebone and Wilkins, 2018). Most recently, Alberta swung from being the only debt-free province in 2015/16, to experiencing the fastest growing debt burden in the country (Fuss and Lafleur, 2021).¹ One key reason for this volatility is that, in good times with comparatively high non-renewable resource revenue (NRR)², the Alberta government increases spending to levels only sustainable with continued high NRR. When non-renewable resource revenue declines, Alberta's finances quickly deteriorate. Despite this cycle, Alberta continues to include all non-renewable resource revenue, which are by their nature one-time revenues, in its annual budget. As the province grapples with ongoing deficits, and with non-renewable resource revenue (as a share of total revenue) at historic lows but projected to rebound, now is the time to consider a new approach to budgeting for non-renewable resource revenue. In developing a new approach, lessons can be drawn from Alberta's past experiences as well from other resource-rich jurisdictions such as Alaska and efforts there to manage volatile resource revenue.

This paper is the first in a series that develops a new long-term fiscal framework for Alberta. It focuses on how to deal with volatile non-renewable resource revenue. It reviews the volatility of NRR and its impact on the provincial budget and contrasts the experience of Alberta's Heritage Fund with that of the Alaska Permanent Fund. It also reviews the benefits from a renewed Alberta Sustainability Fund. Finally, the paper proposes a set of new fiscal rules for managing volatile non-renewable resource revenue.

The next paper in this series will focus on rules governing the Heritage Fund, possibly to be followed by a paper explaining how Alberta can recapture its tax advantage (the "Alberta Advantage"). The series concludes with a paper outlining a comprehensive long-term fiscal framework for Alberta, including a path to a balanced budget and lower debt.

1. Specifically, Alberta has added more net debt (total debt minus financial assets) per person than any other province since losing its debt-free status in 2015/16.

2. In Alberta, non-renewable resource revenue includes royalties from natural gas and by-products, conventional oil, oil sands, coal, and revenues from bonuses and sales of crown leases, rentals, and fees. For more information, see Government of Alberta, 2020b, <<https://open.alberta.ca/opendata/historical-royalty-revenue>>.

1 Alberta's Reliance on Volatile Non-Renewable Resource Revenue

To determine a new fiscal rule for Alberta, it is first necessary to understand the problem. Non-renewable resource revenue (NRR) is an often times significant but volatile component of Alberta's budget. This volatility has created instability in provincial finances.

Figure 1 shows average oil prices based on West Texas Intermediate pricing and Alberta's NRR in real terms since 1970/71.³ As illustrated, real oil prices are highly volatile—ranging from US\$7.05 (\$2010) per barrel in 1971/72 to \$96.81 (\$2010) per barrel in 2007/08. Like the underlying commodity prices, real non-renewable resource revenue has varied considerably over the years, ranging from as low as \$1.6 billion (\$2019) in 1970/71 to as high as \$19.0 billion (\$2019) in 2005/06.

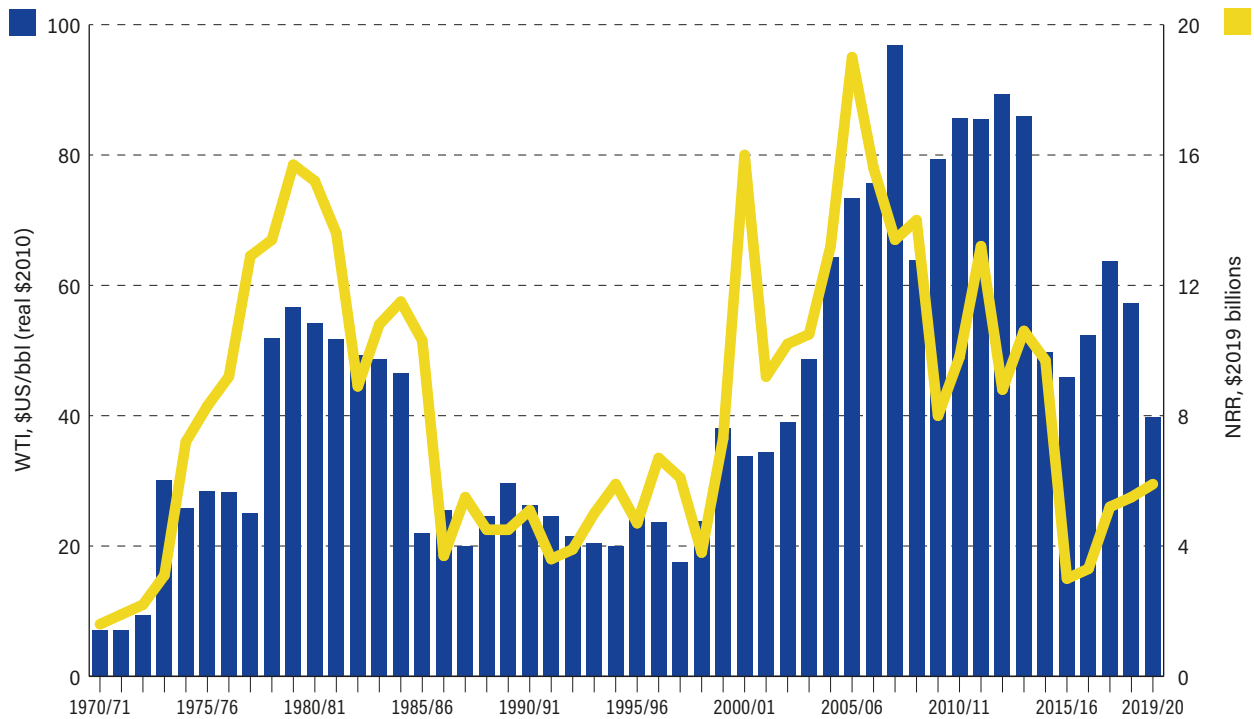
There has also been significant variability in NRR as a share of total provincial government revenue. Figure 2 illustrates NRR as a share of total revenue from 1970/71 to 2019/20. It has accounted for as little as 6.5% of total revenues in 2015/16 to as much as 77.4% in 1979/80. During the oil boom of the 1970s, NRR was relatively high, accounting for 47.5% of total revenues (on average) over the decade. Following two oil-price collapses in the 1980s, NRR abruptly declined in 1986/87 and averaged 18.0% of total revenues over the next 10 years.

Non-renewable resource revenue (as a share of revenue) increased to 41.5% in 2000/01. It averaged 31.3% of total revenue from 2000/01 to 2009/10, but experienced a marked decline in 2006/07. By 2009/10, it accounted for 17.1% of total revenue. From 2010/11 to 2019/20, NRR as a share of total revenue averaged 15.2%. Within that period, non-renewable resource revenue (as a share of total revenue) recorded a marked decline following the collapse of oil-prices that started in 2014, accounting for 6.5% of total revenues in 2015/16. Recent projections (not included in figure 2) estimate that NRR will account for 4.7% in 2020/21—its lowest share of total revenues on record (Government of Alberta, 2020b, 2021a).

Understanding the relationship between NRR and the overall fiscal balance of the provincial government is important in contextualizing the need for a better fiscal rule for NRR. Figure 3 shows the province's actual budget balance from 1970/71 to 2019/20 in real terms (\$2019), compared to what the balance would be without NRR. Alberta experienced periods of budget surpluses, including a string of surpluses beginning in the early 1970s and another beginning in the mid-1990s. Critically, the province would have incurred a deficit

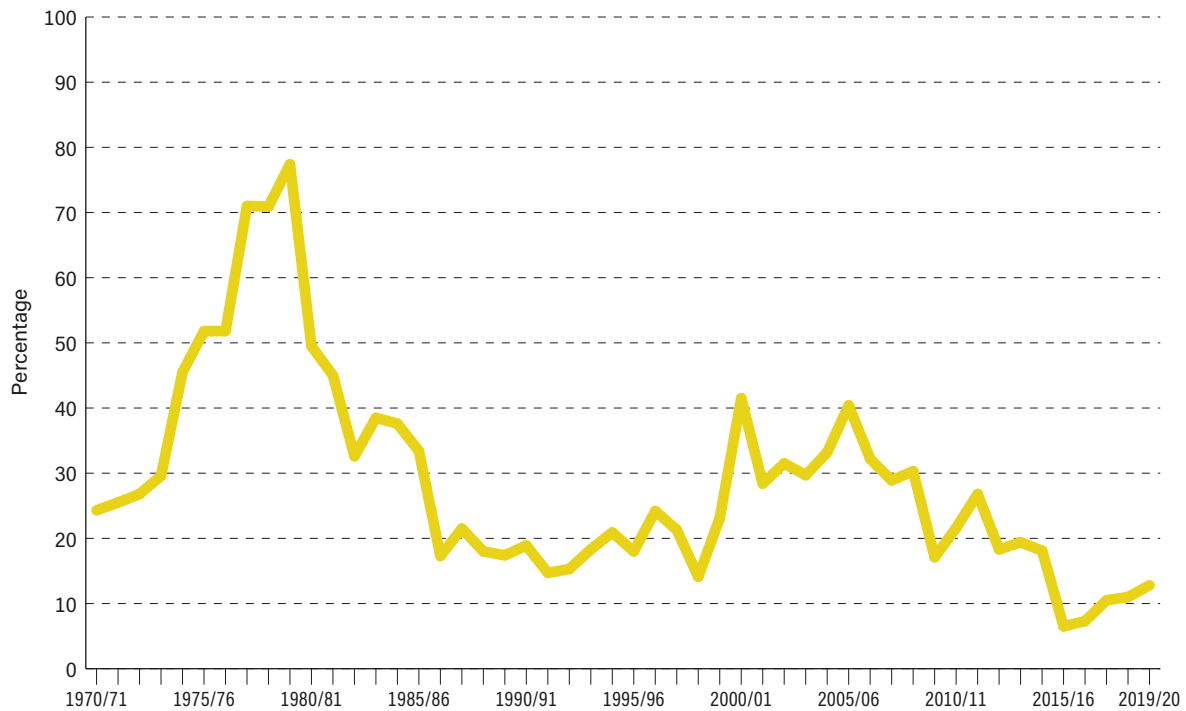
3. It is worth noting that the relationship between oil prices and NRR is not linear because of the way that royalties are calculated. Further, NRR includes other sources such as natural gas royalties and coal royalties, which are also volatile. The real US dollar (\$2010) price of natural gas relative to million British Thermal Units, for example, has ranged from \$0.68 (1972/73) to \$10.17 (2004/05).

Figure 1: Average oil prices (WTI*, \$US/bbl) and non-renewable resource revenue (inflation-adjusted**, \$2019 billions), 1970/71–2019/20



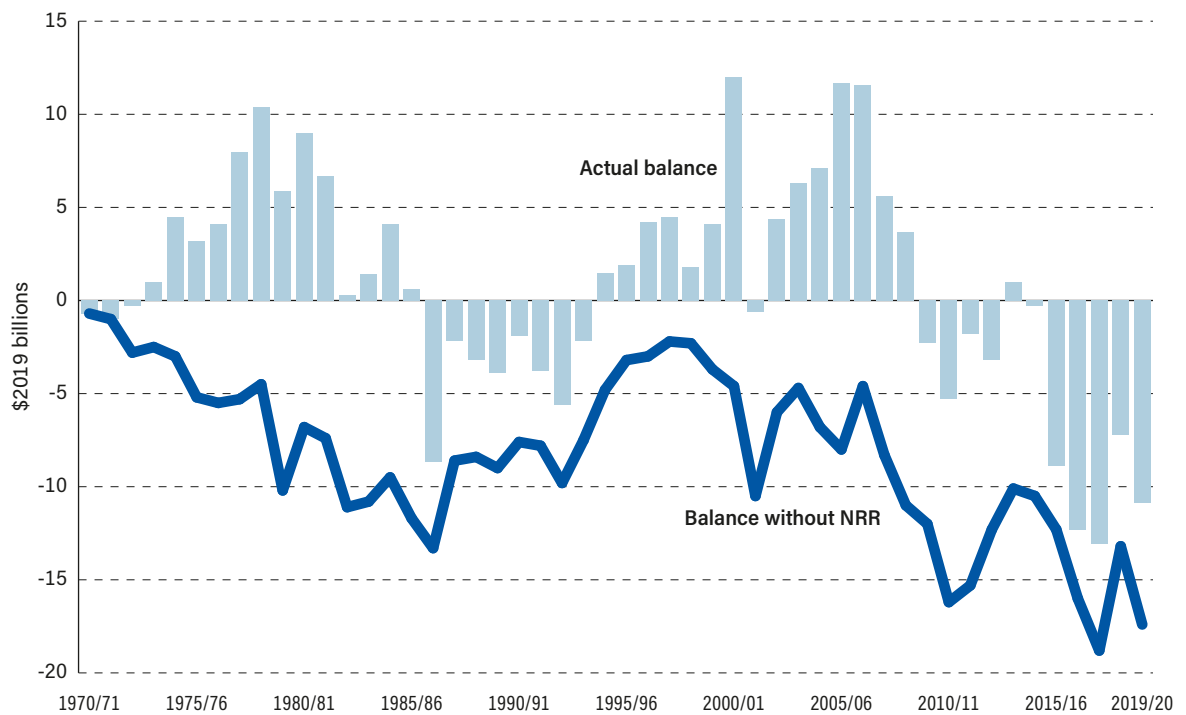
Notes: * West Texas Intermediate (WTI) is a common world oil reference price; based on annual percentage change in Dubai crude series 1970/71–1980/81. **The Alberta inflation adjustments are based on Canadian CPI, 1970/71–1978/79.
Sources: Gov't of Alberta, 2020b; Statistics Canada, 2021b (table 18-10-0005-01); World Bank, 2021.

Figure 2: Non-renewable resource revenue as share (%) of total revenue in Alberta, 1970/71–2019/20



Sources: Gov't of Alberta, 2020b.

Figure 3: Alberta's actual budget balance and balance without non-renewable resource revenue (\$2019 billions), 1970/71–2019/20



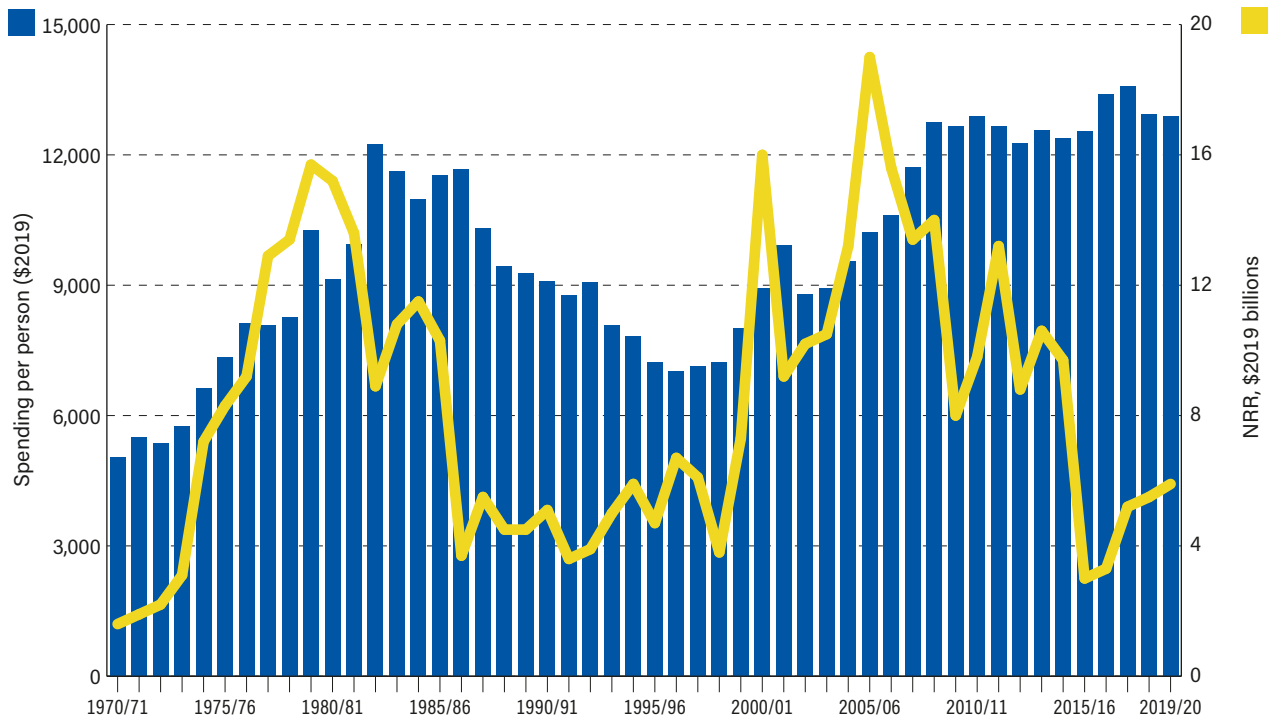
Sources: Finances of the Nation, 2021; Statistics Canada, 2021b (table 18-10-0005-01).

in every year had it not been for NRR.⁴ Alberta's reliance on NRR is particularly marked in certain years. For instance, Alberta ran a \$11.7 billion surplus in 2005/06 (\$2019), which would have been a \$8.0 billion deficit (\$2019) without NRR—a \$19.7 billion difference.

By including all NRR in the budget in most years, the province has fallen into a pattern of financing spending increases with volatile NRR. Figure 4 shows real NRR and real per-person program spending (total spending minus interest costs) since 1970/71. As illustrated, increases in real per-person program spending tend to follow periods of increasing real NRR. For instance, real (\$2019) NRR increased markedly in the 1970s, from

4. The data used for figure 3 comes from *Finances of the Nation*, which is based on Statistics Canada's Government Financial Statistics (GFS) and its predecessor, the Financial Management System (FMS). Data from *Finances of the Nation* was used mainly because it makes adjustments to the GFS and FMS data to allow comparability over time. It also provides greater comparability over time than individual budgets or the Public Accounts. More specifically, *Finances of the Nation* relies on data from three Statistics Canada series: Public Finance Historical Data (PFHD) from 1966 to 1992; federal, provincial and territorial general government revenue and expenditures (FPRTE) from 1989 to 2009; and Canadian Government Finance Statistics (GFS) from 2009 to present, to create a long-term series of government revenue and expenditure data that is more consistent over time and across jurisdictions. Of particular interest to this paper is the "provincial resource revenues" category, which was absent in the FMS data for 1993 through 2004. Another benefit to this new effort is that it produces consistent "total expenditure" and "surplus or deficit" categories by modifying the full accrual accounting used in the GFS.

Figure 4: Program spending per person (\$2019) and non-renewable resource revenue (\$2019 billions), 1970/71–2019/20



Sources: Finances of the Nation, 2021; Gov't of Alberta, 2020b; Statistics Canada, 2021a (table 17-10-0005-01), 2021b (table 18-10-0005-01).

\$1.6 billion in 1970/71 to \$15.7 billion in 1979/80. The provincial government increased real (\$2019) program spending from \$5,040 per person (1970/71) to \$12,245 in 1982/83.

Despite a decline in NRR beginning in 1980/81, per-person spending (in real terms) remained relatively flat for five years before being reduced substantially starting in 1987/88, indicating a lag of several years between declines in NRR and per-person spending. The decline in NRR affected the overall balance of the provincial government, resulting in a string of eight budget deficits beginning in 1986/87 (figure 3) and mounting provincial debt. Indeed, Ferede (2018a; 2018b) found that “a \$1 increase in real per-capita non-renewable resource revenue is associated with a 56-cent increase in program spending in the following fiscal year. However, a \$1 reduction in resource revenue has not been followed by a reduction in program spending or a significant adjustment in other fiscal variables such as personal or corporate tax revenues” (Ferede, 2018b).

The deficits during the 1980s coupled with increasing interest rates led to a near fiscal crisis in the early-1990s. The Klein government enacted extraordinary measures to eliminate the deficit and repair Alberta’s finances, including reducing nominal program spending by 21.6% over three years (Hill, Eisen, and Palacios, 2021). These reforms set the stage for more than a decade of surpluses beginning in 1994/95. Alberta was “debt free” by 2000/01, meaning that it held more in financial assets than it owed in debt.

Unfortunately, the Alberta government did not learn from its past mistakes. When another cyclical increase in NRR began in 1999/00—both in real terms (figure 1) and as a share of revenue (figure 2)—the province fell into the same cycle of using comparatively high NRR to finance growth in spending. Real (\$2019) per-person program spending increased from \$8,012 in 1999/00 to \$12,740 by 2008/09. When NRR began falling again in 2006/07, large surpluses turned into deficits in 2009/10, which have persisted, except for 2013/14.⁵

With non-renewable resource revenue (as share of total revenue) at historic lows, now is an opportune time for Albertans to consider a new fiscal rule to change the treatment of these revenues in the budget. While it is necessary to consider Alberta's current deficit and debt in determining the next steps, this paper focuses narrowly on establishing sound fiscal rules for NRR to ensure that the province does not continue to repeat past mistakes by financing increasing spending with volatile NRR. A discussion of the broader fiscal transition to repair Alberta's finances and ensure long-term sustainability is reserved for future papers in this series and will incorporate the recommendations from this paper.⁶

5. Alberta's problem with spending and the rise and fall of NRR is well documented. For more information, see Hill, Eisen, and Palacios, 2021; Mackinnon et al., 2019; Eisen, Palacios, Lafleur, and Fuss, 2019; Kneebone and Wilkins, 2018; and Milke and Palacios, 2015.

6. See Dahlby, 2021 and Tombe, 2021 for a discussion of policy considerations for Alberta's fiscal future.

2 The Financial History of Alberta's Heritage Fund

One aspect of understanding the volatility of Alberta's non-renewable resource revenue is the degree to which these one-time revenues are saved rather than included in the budget. In the early 1970s, Alberta experienced a windfall of non-renewable resource revenue, which ultimately led the Lougheed government to create the Heritage Fund in 1976. Its objective was “to save for the future, strengthen or diversify the economy, and improve the quality of life of Albertans” (Government of Alberta, 2021b). Today, the fund's mission is “to provide prudent stewardship of the savings from Alberta's non-renewable resources by providing the greatest financial returns on those savings for current and future generations of Albertans” (Government of Alberta, 2020c).

There is also an important economic and financial principle to consider in the use of non-renewable resource revenue. Put simply, harnessing assets such as oil and gas reserves that result in NRR for the government, which are one-time occurrences, to fund ongoing annual spending creates a mismatch between the nature of revenues—one-time—and spending—ongoing (Crowley and O'Keefe, 2006). Saving a portion of NRR means that to some extent the asset is being retained and simply transferred from a resource deposit that generates one-time revenue to a financial asset that can generate ongoing income⁷ for the government.

Table 1 includes transfers to and from Alberta's Heritage Fund since 1976/77 when it was created. Transfers to the fund include contributions made by the Alberta government, either through resource revenue allocations or periodic deposits. Periodic deposits include, for instance, \$3.9 billion transferred from the government's general budget from 2005/06 through 2007/08. Investment income reflects net income earned by the fund on its assets. In certain periods, a portion of the investment income was set aside to protect the fund's real value—to “inflation-proof” the fund. Transfers from the fund include outflows to the Alberta government's general budget or to capital projects. Fund equity reflects the total value of the fund at a particular point in time, including both the principal and accumulated retained earnings, which for simplicity will hereafter be referred to as the fund's “value”.

The Heritage Fund received its first contribution in 1976. The total contribution came from two sources: 30% of all non-renewable resource revenue collected by the Alberta government that fiscal year, worth \$620 million; and a special contribution of \$1.5 billion from Alberta's General Revenue Fund. In total, the initial contribution was \$2.1 billion. The government contributed 30% of all non-renewable resource revenue for the first seven years until 1983/84. In other words, for the first seven years starting

7. The question of how to use the income (*i.e.*, earnings) from the Heritage Fund is an important one and will be the subject of the next paper in this series.

Table 1: Alberta's Heritage Fund—deposits, withdrawals, and total value (\$millions), 1976/77–2019/20

Fiscal year	Transfers to the Fund			Investment income		Transfers from the Fund			Value	
	Resource revenue allocation	Deposits	Advanced education endowment	Net income (loss):	of which, set aside for inflation-proofing ³	Investment income transfers	Capital project expenditures	Other transfers	Fund equity at cost	Fund equity at cost, 2019, 2002=100 ⁴
1976/77	2,120	0	0	88	0	0	(36)	0	2,172	9,994
1977/78	931	0	0	194	0	0	(87)	0	3,210	13,671
1978/79	1,059	0	0	294	0	0	(132)	0	4,431	17,324
1979/80	1,332	0	0	343	0	0	(478)	0	5,628	20,134
1980/81	1,445	0	0	724	0	0	(227)	0	7,570	24,564
1981/82	1,434	0	0	1,007	0	0	(349)	0	9,662	27,764
1982/83	1,370	0	0	1,482	0	(867)	(296)	0	11,351	29,320
1983/84	720	0	0	1,467	0	(1,469)	(330)	0	11,739	28,814
1984/85	736	0	0	1,575	0	(1,575)	(228)	0	12,247	29,307
1985/86	685	0	0	1,667	0	(1,667)	(240)	0	12,692	29,484
1986/87	217	0	0	1,445	0	(1,445)	(227)	0	12,682	28,490
1987/88	0	0	0	1,353	0	(1,353)	(129)	0	12,553	27,094
1988/89	0	0	0	1,252	0	(1,252)	(155)	0	12,398	26,052
1989/90	0	0	0	1,244	0	(1,244)	(134)	0	12,264	24,753
1990/91	0	0	0	1,337	0	(1,337)	(150)	0	12,114	23,114
1991/92	0	0	0	1,382	0	(1,382)	(84)	0	12,030	21,681
1992/93	0	0	0	785	0	(785)	(84)	0	11,946	21,209
1993/94	0	0	0	1,103	0	(1,103)	(71)	0	11,875	20,876
1994/95	0	0	0	914	0	(914)	(49)	0	11,826	20,488
1995/96	0	0	0	1,046	0	(1,046)	0	0	11,826	20,027
1996/97 ¹	0	0	0	932	176	(756)	0	0	12,002	19,878
1997/98	0	0	0	947	25	(922)	0	0	12,027	19,535
1998/99	0	0	0	932	0	(932)	0	0	12,027	19,294
1999/00	0	0	0	1,169	230	(939)	0	0	12,257	19,190
2000/01	0	0	0	706	0	(706)	0	0	12,257	18,561
2001/02	0	0	0	206	0	(206)	0	0	12,257	18,138
2002/03	0	0	0	(894)	n/a	0	0	0	11,363	16,260
2003/04	0	0	0	1,133	0	(1,133)	0	0	11,363	15,575
2004/05	0	0	0	1,092	0	(1,092)	0	0	11,363	15,355
2005/06	0	1,000	750	1,397	382	(1,015)	0	0	13,495	17,864
2006/07	0	1,000	250	1,648	283	(1,365)	0	0	15,028	19,150
2007/08	0	918	0	824	466	(358)	0	0	16,412	19,920
2008/09	0	0	0	(2,574)	n/a	0	0	0	13,838	16,285
2009/10	0	0	0	2,006	0	(2,006)	0	0	13,838	16,298
2010/11	0	0	0	1,080	360	(720)	0	0	14,198	16,559
2011/12	0	0	0	798	454	(344)	0	0	14,652	16,680
2012/13	0	0	0	1,316	161	(1,155)	0	0	14,813	16,678
2013/14	0	0	0	2,109	193	(1,916)	0	0	15,006	16,659
2014/15 ²	0	0	0	1,678	210	(1,468)	0	(255)	14,961	16,195
2015/16	0	0	0	1,238	209	(1,029)	0	0	15,170	16,237
2016/17	0	0	0	2,333	182	(2,151)	0	0	15,352	16,249
2017/18	0	0	0	1,787	230	(1,557)	0	0	15,582	16,240
2018/19	0	0	0	937	374	(563)	0	0	15,956	16,240
2019/20	0	0	0	1,318	287	(1,031)	0	0	16,243	16,243
Totals	12,049	2,918	1,000	44,820	4,222	(40,803)	(3,486)	(255)		

Notes: Section 8 of the *Alberta Heritage Savings Trust Fund Act* states that the net income of the Heritage Fund, less any amount retained in the Fund, in accordance with section 11 of the Act, shall be transferred to the general revenue fund in a manner determined by the Minister of Finance (Gov't of Alberta, 2020c). The amount to be retained in the Fund for inflation proofing is determined by multiplying the accumulated operating surplus of the Fund from the prior fiscal year end by the estimated percentage increase in the Alberta Consumer Price Index for the year. In accordance with section 11(2), if the Alberta CPI is a negative number, that negative number shall be treated as if it were zero. **[1]** In 1996/97, the Fund commenced a new framework intended to transition into more market-based investments, inflation proofing the Fund and providing a long-term investment horizon. **[2]** "Other Transfers" for 2014/15 consists of \$200 million to the Alberta Heritage Scholarship Fund; \$3 million for the Agriculture and Food Innovation Account; and, \$52 million to the Access to the Future Fund. **[3]** 2002/03 and 2008/09 are n/a because transfers are not made in years where the fund posts a loss. **[4]** The inflation adjustments for 1976/77 to 1978/79 are based on Canadian CPI.

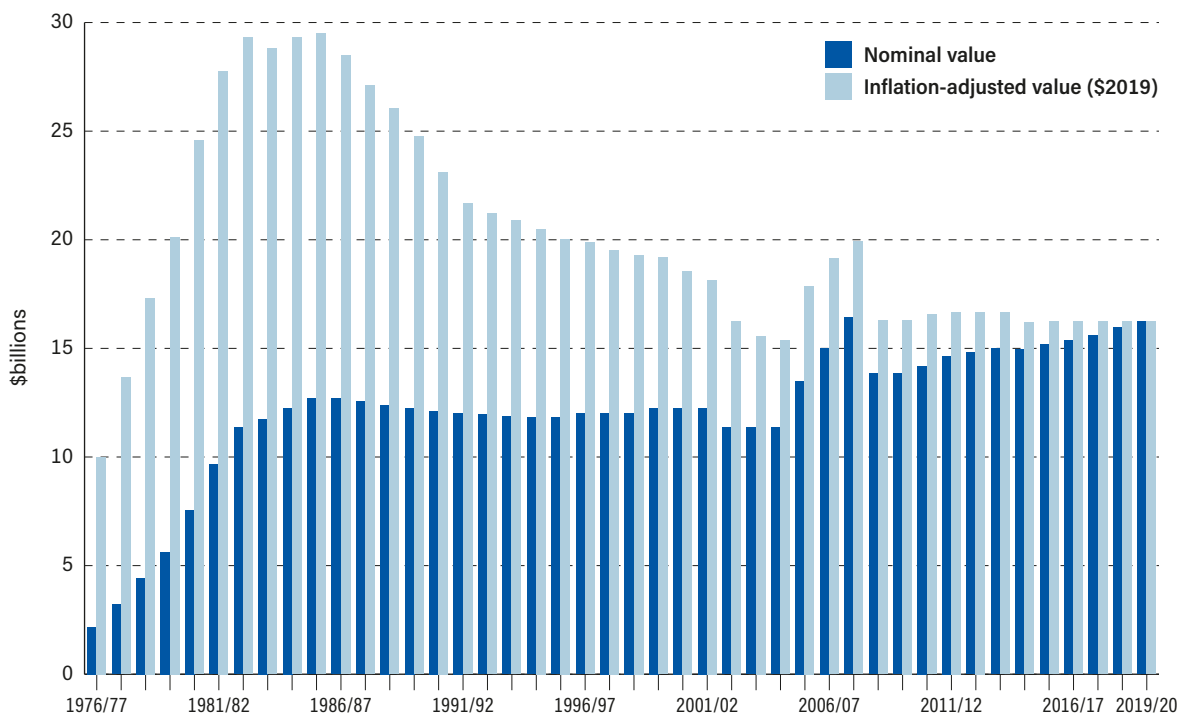
Sources: Gov't of Alberta, 1999, 2020c; Statistics Canada, 2021b: table 18-10-0005-01.

in 1976/77, Alberta operated with a fiscal rule that imposed a certain level of discipline on how much NRR could be included in the budget (70%) with the remainder being deposited into the Heritage Fund.

The 30% contribution rate set by the Lougheed government worked as a fiscal rule to maintain consistent contributions from 1976/77 to 1982/83 but only because the government was strictly committed to it. In legal terms, it was functionally weak as it was only a statutory law (the *Alberta Heritage Savings Trust Fund Act*, RSA 1980, c A-27), and contributions also required annual authorizations from the provincial legislature.

Adhering to this rule in the first seven years served the Heritage Fund and the provincial budget well.⁸ Figure 5 shows the Heritage Fund’s nominal and inflation-adjusted (\$2019) value over time. It is useful to show both the fund’s nominal and real value to highlight the impact of inflation—and absence of inflation-proofing—particularly in certain periods. As shown, the nominal value of the Heritage Fund grew from \$2.2 billion⁹ in 1976/77 to \$11.4 billion in 1982/83 over the period requiring 30% contributions. The NRR not set aside for the Heritage Fund—the remaining 70% of NRR—helped the government to operate in surplus over the period (see figure 3).

Figure 5: Alberta’s Heritage Fund—nominal and inflation-adjusted value (\$billions), 1976/77–2019/20



Sources: Gov’t of Alberta, 2020c; Statistics Canada, 2021b (table 18-10-0005-01).

8. It is worth noting that there was still a significant run-up of real per-person program spending over this period (figure 4), which suggests the need for additional fiscal rule(s) to constrain and stabilize spending. Section 6 explores the Stabilization Fund as a possible approach.

9. This differs from the initial contribution (\$2.1 billion) because it reflects the value of the fund, or “fund equity”. In other words, it includes net income and expenditures.

The legal rule requiring that 30% of all NRR be contributed to the Heritage Fund was only statutory in nature and thus easily changed when economic and fiscal circumstances changed. The introduction of the National Energy Program and the recession in the early 1980s led to a decline in NRR in 1982/83—both in real terms and as a share of total revenue—that adversely affected the provincial government’s finances. Paired with increased spending levels in the 1970s and 1980s, there was significant pressure on Alberta’s finances. For the first time, the provincial government transferred money, specifically \$867 million to its general budget from the Heritage Fund to mitigate the effects of the recession on the budget (table 1). Moreover, it reduced the contribution rate to the Heritage Fund to 15% of all NRR, half the previous rate.

Put differently, the government was no longer committed to its original fiscal rule of contributing 30% of NRR to the Heritage Fund. The Fund’s nominal value still increased, albeit more slowly, from \$11.7 billion (1983/84) to \$12.7 billion (1986/87) with a 15% contribution rate. The statutory nature of the rule requiring NRR contributions to the Heritage Fund meant that it was relatively easy for the provincial government to end any contributions, which it did following a second collapse of oil prices in 1986/87. Following the end of contributions, the fund’s nominal value fluctuated between \$12.6 and \$11.4 billion from 1987/88 to 2004/05.

In addition, it’s important to note that there was no rule to require that the value of the Heritage Fund be inflation-protected. In fact, there was no requirement at all until 1996/97. As shown in table 1, no earnings were set aside to preserve the real value of the fund in the first 20 years of its existence. Inflation-proofing began sporadically following the introduction of new legislation in 1996/97,¹⁰ but a stipulation was added in 1998/99 that there would be no requirement to inflation-proof the fund until the accumulated provincial debt was eliminated, unless deemed advisable by the Provincial Treasurer (Government of Alberta, 1999). This being the case, no earnings were set aside to inflation-proof the fund from 2000/01 to 2004/05.

The fund’s real value (\$2019) declined in every year from 1986/87 to 2004/05. Overall, the fund’s real value fell from \$28.5 billion (1986/87) to \$15.4 billion (2004/05). Inflation-proofing resumed in 2005/06.¹¹ Other than \$3.9 billion deposited from 2005/06 to 2007/08, the provincial government made no further contributions to the fund. Its nominal value peaked at \$16.4 billion (2007/08). The Heritage Fund was valued at \$16.2 billion in 2019/20. As of March 31, 2020, a cumulative total of \$4.2 billion had been retained in the fund for inflation-proofing.

10. *Alberta Heritage Savings Trust Fund Act*, SA 1996, c A-27.01. <<https://canlii.ca/t/53nrm>>, as of March 25, 2021.

11. Despite frequent changes to inflation-proofing, there has never been a requirement that future positive earnings or additional NRR be used to inflation-proof the fund in years when there is an investment loss. As a result, a loss in the fund permanently reduces the principal. As shown in table 1, when the fund incurred a loss in 2002/03 and 2008/09, no earnings were set aside to inflation-proof the principal and the value of the fund was significantly reduced.

It is also worth noting that the province has made frequent withdrawals that in many years exceeded annual earnings. In other words, in many years the provincial government not only failed to contribute to the Heritage Fund based on NRR but also withdrew more money from the fund than was earned on its assets, thus decreasing the principal value of the fund. The absence of a rule for withdrawals is a major flaw in the Heritage Fund that has further limited its growth.

In sum, Alberta imposed and followed a statutory requirement to contribute 30% of NRR to the Heritage Fund, which worked well to the degree it was followed during good times. The nature of the rule—that it was simply a statutory law—meant that it could be easily changed when circumstances changed. Indeed, no contributions were made to the Heritage Fund in 30 of the 44 years of its existence and the province has deposited just 4.9% of total NRR to the fund over its lifetime.¹²

12. This figure does not include “deposits” or the “advanced education endowment”.

3 The Financial History of the Alaska Permanent Fund

Alaska’s experience with its Permanent Fund is a useful comparator for Alberta and the Heritage Fund as both jurisdictions have large resource sectors and both funds were created in 1976 under similar circumstances. Unlike Alberta’s Heritage Fund, however, the Alaska Permanent Fund operates under a constitutionally imposed fiscal rule (Alaska Permanent Fund Corporation, 2021b). A brief review of the fund’s history helps to illustrate the benefit of such a fiscal rule.

Oil was first discovered in Prudhoe Bay in 1968, which led to a US\$900 million windfall in government revenue—nearly nine times the size of the annual state budget (Murphy and Clemens, 2013). The windfall was quickly spent and there was a general consensus that it had been wasted (Hammond, 2012). As the Trans-Alaska Pipeline was approaching completion in 1974, Alaskans sought to protect their mineral revenues and avoid repeating past mistakes. A constitutional amendment was proposed that required at least 25% of all mineral revenues to be deposited into a dedicated fund.¹³ The proposal was included as a referendum question in a statewide general election and passed with two-thirds support. On February 28, 1977, the fund received its first deposit of dedicated mineral revenues worth US\$734,000.¹⁴ Other transfers plus a small investment return in the fiscal year brought the 1976/77 fund value to almost US\$4.0 million.

Notably, legislation passed in 1980 imposed even stricter discipline. Specifically, the 1980 *Permanent Fund Act* required that 50% of revenues from new oil and gas fields be deposited into the fund. However, Alaska’s largest oil and gas fields including those in the Prudhoe Bay were leased prior to the 1980s, so the 25% constitutionally mandated rate has dominated (Alaska Permanent Fund Corporation, 2020).

The contribution rates in Alaska, like the contribution rates used by the Loughheed government in the early years of the Heritage Fund (30% and 15%), are to some extent arbitrary. Other research suggests the contribution rate should be closer to 50%. Kneebone, McKenzie, and Taylor (2004), for instance, suggest a 50% contribution rate based on the premise that fiscal policy should be “sustainable” in the long run, meaning that the policy should ensure future Albertans enjoy at least the same level of per-person income as current Albertans.¹⁵ The key point to be taken from both the actual

13. Mineral revenues are defined as all mineral lease rentals, royalties, royalty sale proceeds, federal mineral revenue sharing payments, and bonuses received by the State.

14. Additional transfers made by special legislative appropriations were made in many years, so that the actual contribution rate is often higher than the mandated 25%. For example, from 1981 to 1985, \$2.7 billion in additional mineral revenues were deposited to the fund (Alaska Permanent Fund Corporation, 2008).

15. Kneebone, McKenzie, and Taylor (2004) gave consideration to, and recognized the importance of, work by Hartwick (1977) and Stiglitz (1974).

experiences of Alaska and Alberta in the early years as well as the research by Kneebone, McKenzie, and Taylor is that some share of the NRR be earmarked for savings.

Alaska’s constitutional amendment requires that a minimal amount of revenue be contributed to the fund each year, which has helped the fund to grow significantly over time. Table 2 summarizes the financials of the Alaska Permanent Fund. The fund is notionally segmented into a “non-spendable” portion and a “spendable” portion. Alaska legally prohibits use of the principal (“non-spendable” portion) without approval by a referendum; only the earnings (“spendable” portion) of the fund may be spent.

The Permanent Fund is a single fund with a complicated accounting structure. Not all aspects of the fund are relevant to this paper and this section focuses on those aspects of the fund applicable to Alberta. Table 2 includes the aspects of the Alaska Permanent Fund relevant to its fiscal rule—particularly the non-spendable portion comprising annual contributions and appropriations—and how these aspects of the fund have developed over the years. The six columns under “Non-spendable” show how the various sources of funds have contributed to the principal of the Permanent Fund over time. In accordance with Alaska’s fiscal rule, a minimum of 25% of mineral revenues have been deposited annually. As of 2019/20, state mineral revenues accounted for 38% (US\$17.6 billion) of total contributions and appropriations over the lifetime of the Permanent Fund.¹⁶

“Inflation-proofing” was established by statute in 1982 to preserve the market value of the fund. The annual portion of the earnings set aside for inflation-proofing¹⁷ represent 39% (US\$18.0 billion) of the total contributions and appropriations over the fund’s lifetime. Put differently, earnings set aside to inflation-proof the fund have contributed roughly the same amount as mineral revenue contributions to the fund’s principal since inception. Other appropriations to the non-spendable portion of the Permanent Fund reflect special legislative appropriations, which can come from the earnings of the fund or other sources, such as the State’s General Fund, and account for the remaining 24% (US\$11.0 billion) of total contributions and appropriations. In other words, the State of Alaska itself has made discretionary contributions to the Permanent Fund in certain years. These three sources of contributions to the non-spendable portion of the fund added up to US\$46.6 billion in 2019/20. Unrealized earnings¹⁸ of US\$5.8 billion bring the non-spendable fund’s value to US\$52.4 billion in 2019/20.

The “spendable” portion of the fund is the total earnings reserve, which includes realized earnings and unrealized gains and losses that have not been spent. The cumulative earnings that have not been appropriated remain available for appropriation. The decisions about how to use the earnings reserve are made each year by the State Legislature and the Governor. The reserve was valued at US\$12.9 billion in 2019/20, which brought the Alaska Permanent Fund’s total value to US\$65.3 billion in 2019/20.

16. This assumes that “unrealized earnings” flow from the relative contributions of “state mineral revenues”, “inflation transfer”, and “other appropriations”.

17. Amounts are based on statutory calculation and subject to legislative appropriation.

18. The cumulative gain (or loss) on assets from purchase to the current date.

Table 2: Alaska Permanent Fund—financial history of select accounts (\$US millions), 1976/77–2019/20

Fiscal year	State mineral revenues	Inflation transfer	Non-Spendable				Spendable Total earnings reserve	Value		Uses of funds	
			Other appropriations	Total contributions and appropriations	Unrealized earnings	Total principal		Total value	Total value, inflation-adjusted (\$2019, 1982/84=100)	Total statutory and legislative appropriations	Of which, dividends paid to residents
1976/77	4	0	0	4	0	4	0	4	15	0	0
1977/78	50	0	0	55	0	55	0	55	192	1	0
1978/79	84	0	0	139	(1)	138	0	138	450	2	0
1979/80	344	0	0	483	11	494	0	494	1,456	20	0
1980/81	385	0	900	1,769	20	1,788	59	1,847	4,940	47	0
1981/82	401	0	800	2,969	68	3,038	244	3,281	8,120	89	0
1982/83	421	231	400	4,021	54	4,076	354	4,429	10,398	217	471
1983/84	366	151	300	4,838	(351)	4,487	557	5,045	11,630	155	177
1984/85	368	235	300	5,741	250	5,991	763	6,754	14,951	217	160
1985/86	323	216	0	6,281	937	7,218	1,264	8,482	18,333	303	210
1986/87	171	148	1,264	7,864	533	8,396	529	8,926	18,935	391	297
1987/88	418	303	16	8,600	298	8,898	591	9,489	20,055	424	376
1988/89	228	360	1	9,190	747	9,937	635	10,572	22,261	463	430
1989/90	267	454	2	9,912	971	10,883	605	11,488	23,519	491	444
1990/91	435	559	2	10,908	968	11,875	582	12,457	24,019	493	475
1991/92	338	477	2	11,724	2,386	14,110	645	14,755	27,211	493	478
1992/93	315	363	7	12,409	2,090	14,499	965	15,465	27,586	537	479
1993/94	210	372	8	12,998	1,108	14,107	1,117	15,223	26,332	566	502
1994/95	318	348	8	13,672	1,707	15,379	1,203	16,581	28,086	565	527
1995/96	264	407	1,863	16,206	2,084	18,290	103	18,393	30,281	646	537
1996/97	308	486	828	17,828	3,169	20,997	107	21,104	33,819	749	618
1997/98	231	423	35	18,516	3,971	22,487	1,389	23,876	37,706	893	720
1998/99	156	288	41	19,001	3,541	22,542	2,590	25,132	39,122	1,048	872
1999/00	311	423	280	20,015	3,529	23,543	2,973	26,516	40,860	1,175	1,015
2000/01	339	686	8	21,048	1,384	22,431	2,384	24,815	37,605	1,116	1,146
2001/02	258	602	(23)	21,884	505	22,389	1,136	23,525	34,662	930	1,086
2002/03	398	352	354	22,988	1,106	24,094	100	24,194	34,972	691	909
2003/04	353	524	(340)	23,526	3,016	26,541	859	27,400	38,558	581	660
2004/05	481	641	0	24,647	3,875	28,522	1,440	29,962	41,101	559	552
2005/06	601	856	0	26,104	4,221	30,325	2,585	32,910	43,805	725	505
2006/07	532	860	0	27,497	6,198	33,695	4,132	37,826	48,787	1,064	659
2007/08	844	808	0	29,149	2,064	31,213	5,321	36,534	46,097	1,326	993
2008/09	651	1,144	0	30,945	(1,449)	29,496	420	29,916	36,101	857	1,276
2009/10	679	0	0	31,624	421	32,045	1,210	33,255	39,660	858	815
2010/11	887	533	0	33,044	4,788	37,832	2,308	40,140	47,037	813	817
2011/12	915	1,073	0	35,033	3,220	38,253	2,081	40,333	45,789	622	757
2012/13	840	703	0	36,576	4,334	40,909	3,944	44,853	49,811	634	563
2013/14	779	586	0	37,941	7,062	45,002	6,211	51,214	55,143	1,267	571
2014/15	600	624	0	39,165	6,473	45,638	7,162	52,801	55,950	1,397	1,201
2015/16	285	0	0	39,449	4,750	44,200	8,570	52,770	55,633	714	1,329
2016/17	365	0	0	39,814	7,155	46,970	12,816	59,785	62,762	25	652
2017/18	353	0	0	40,167	5,863	46,030	18,865	64,895	67,802	769	696
2018/19	385	990	0	41,542	6,278	47,820	18,481	66,300	67,220	2,745	1,023
2019/20	319	758	4,000	46,619	5,789	52,408	12,894	65,302	65,302	2,954	1,017
Totals	17,597	17,984	11,039							30,636	26,013

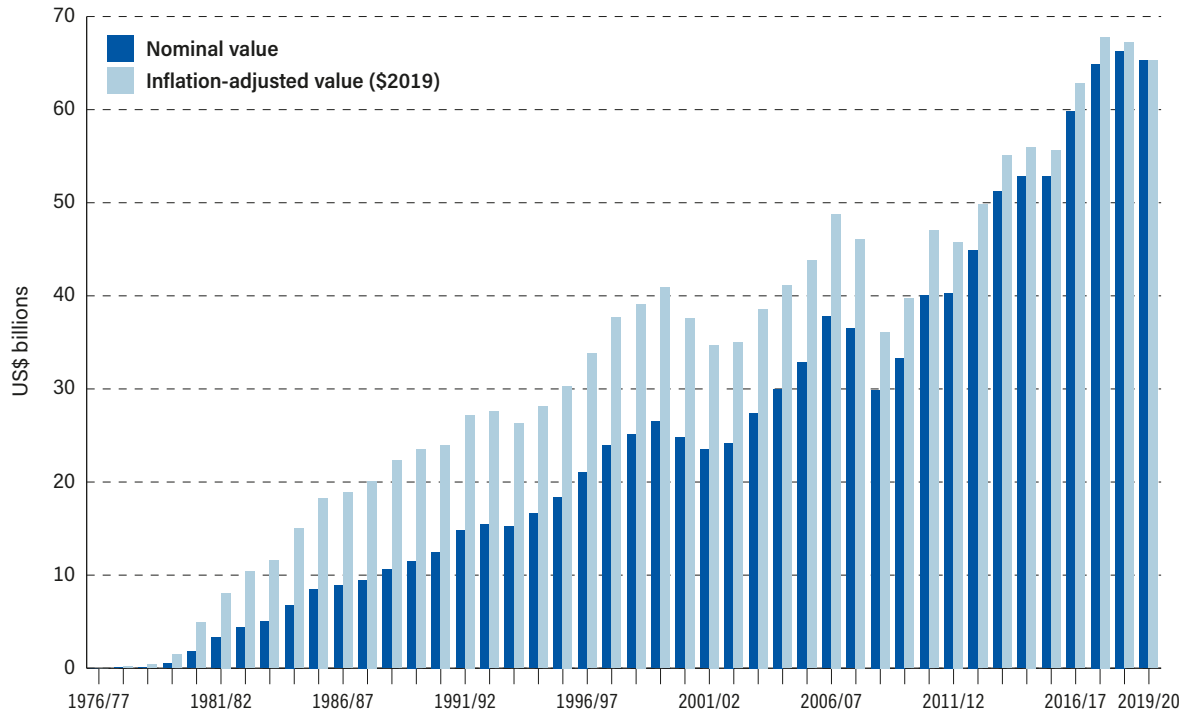
Sources: Alaska Department of Revenue, Permanent Fund Dividend Division, 2021; Alaska Permanent Fund Corporation, 1978–2020, 2021c; Bureau of Labor Statistics, 2021.

Appropriations from the earnings reserve have been mainly used to pay an annual dividend to Alaska citizens.¹⁹ Total statutory and legislative appropriations from the fund sum to US\$30.6 billion, of which US\$26.0 billion (85%) have been used to pay dividends to citizens. These payments can be significant. For instance, in 2015/16, the total dividend payment was US\$1.3 billion, US\$2,072 per Alaskan citizen (Alaska Department of Revenue, Permanent Fund Dividend Division, 2021).

As previously noted, only the earnings (minus inflation-proofing) of the fund are eligible to be spent. The power of compound investing over time has resulted in a situation in which the earnings of the fund now exceed the annual contributions from mineral revenues. Over the fund's lifetime, earnings have become so significant that total appropriations have exceeded total contributions from mineral revenue by US\$13.1 billion. By requiring annual contributions, and protecting the principal (portion not spendable) of the fund from being spent or eroded through inflation, the Alaska Permanent Fund has grown significantly over time.

Figure 6 shows the value of the Alaska Permanent Fund in nominal and inflation-adjusted terms since its inception. As illustrated, the Alaska Permanent fund has grown to US\$65.3 billion (2019/20) since 1976/77. The benefit of Alaska's approach is particularly evident in the last decade. More specifically, the fund's nominal value grew from US\$40.1 billion (2010/11) to US\$65.3 billion (2019/20), for a total increase of US\$25.2 billion.

Figure 6: Alaska Permanent Fund—nominal and inflation-adjusted value (US\$ billions), 1976/77–2019/20

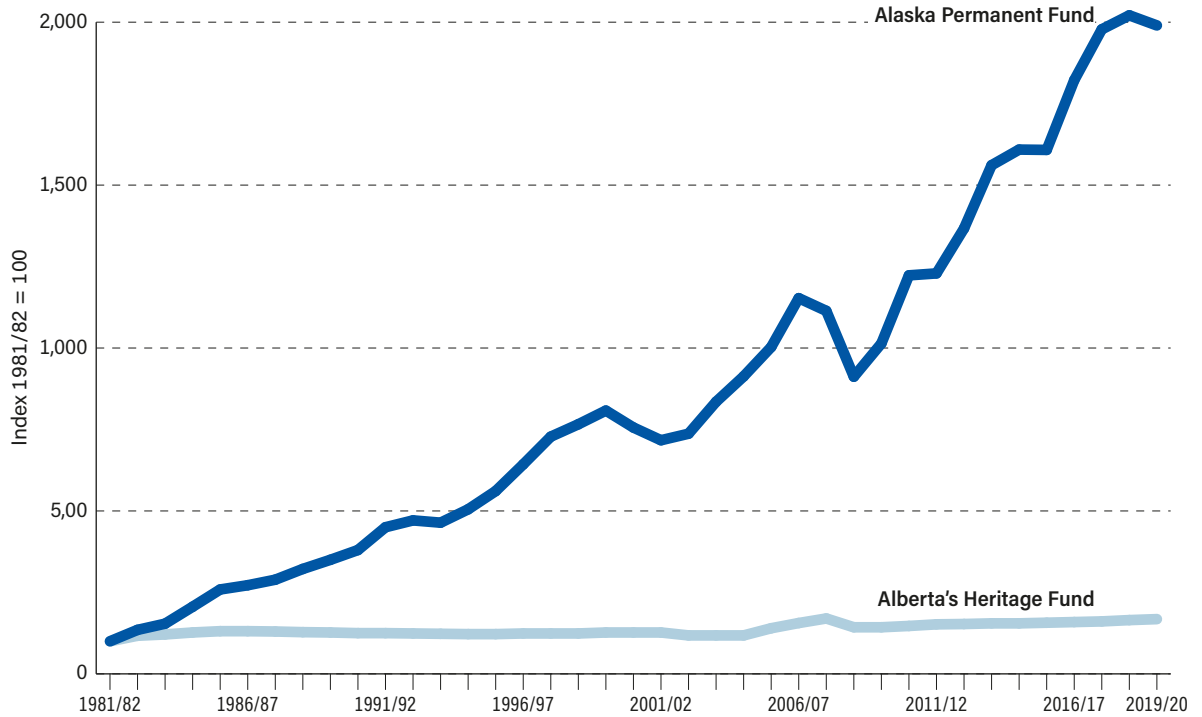


Sources: Alaska Permanent Fund Corporation, 2021c; Bureau of Labor Statistics, 2021.

19. Other uses include appropriations to the Alaska Capital Income Fund, for example.

Figure 7 uses an index to compare the nominal growth of Alberta’s Heritage Fund and Alaska’s Permanent Fund. To exclude years of disproportionately large contributions (for both Alaska and Alberta), the figure shows nominal growth since 1981/82. Since that year, the value of Alaska’s Permanent Fund has grown by 1,890% (in nominal terms) to reach US\$65.3 billion in 2019/20. In contrast, the nominal value of Alberta’s Heritage Fund has only managed 68% growth to reach \$16.2 billion in 2019/20.

Figure 7: Index of the value of Alberta's Heritage Fund (fund equity at cost) and the Alaska Permanent Fund (total value), 1981/82–2019/20



Sources: Alaska Permanent Fund Corporation, 2021c; Bureau of Labor Statistics, 2021; Gov't of Alberta, 2020c; Statistics Canada, 2021b (table 18-10-0005-01).

The success of Alaska’s Permanent Fund compared to the modest value of the Heritage Fund today reflects decades of consistent contributions required by a constitutional fiscal rule, as well as the importance of inflation-proofing and the power of compound interest.

4 Creating a Constitutional Rule for Alberta

The financial history of Alberta's Heritage Fund demonstrates that a well-intentioned statutory law can be easily changed by legislatures in the future. Put differently, a statutory fiscal rule can work only if it is strictly followed by the government, which makes it vulnerable to erosion over time to the point of being ineffective or even eliminated. A review of Alaska's experience demonstrates how a constitutionally mandated fiscal rule is more effective and robust over time, particularly during periods with low commodity prices and thus lower non-renewable resource revenue.

For this reason, it is critical that any new fiscal rule for the treatment of NRR contributions in Alberta be constitutional rather than statutory.²⁰ While provinces do not have codified constitutions like their counterparts in the United States, there are portions of the national, Canadian constitution that apply to specific provinces rather than the nation as a whole.²¹ A number of studies have explored how provinces can implement amendments specific to their province.²² For instance, Clemens, Fox, Karabegović, LeRoy, and Veldhuis (2003) outlined options that provincial governments can use to implement fiscal rules within the national constitutional framework. The following brief summary is based on an option outlined in that paper.

Under section 43 of the *Constitution Act, 1982*, the Alberta government, with support from the federal government, could introduce a constitutional amendment to require that some portion of non-renewable resource revenue be contributed to the Heritage Fund annually. The provincial government would first propose such a rule to Albertans by way of a referendum, as is required by law in the province. A referendum is also an important opportunity to engage and educate the public on the advantages and disadvantages of such an amendment. If supported, it establishes a level of public buy-in that signals the public would resist or at least be more skeptical of future changes; such public support can act as an important mechanism to enforce the fiscal rule and protect it from future revisions. Finally, a referendum helps garner the support needed from the federal House of Commons and Senate²³ by involving citizens in the amendment process.

20. The authors would like to acknowledge the assistance of Professor Bruce Pardy in developing this section of the paper. Any errors or omissions are the responsibility of the authors.

21. Section 45 of the *Constitution Act 1982* says: "Subject to section 41, the legislature of each province may exclusively make laws amending the constitution of the province".

22. For example, Pardy (2016) explains how the Ontario government could change the constitution pertaining to its provincial education system. Morton (2018) reviews and recommends options to entrench fiscal rules in an Alberta Constitution.

23. Please note that it is not entirely clear that the Senate has to approve legislation recognizing a provincially requested change in the Constitution.

Assuming the amendment is supported by Albertans through a referendum, the provincial government would then pass legislation recognizing the result of the referendum, namely the introduction of a fiscal rule requiring a portion of non-renewable resource revenue to be saved in the Heritage Fund. The Alberta government would then request that the federal government (that is, the House of Commons and the Senate) pass the same resolution recognizing the will of Albertans to impose such a rule.

To reverse the rule or otherwise ignore its requirements would mean a future Alberta government would have to seek approval by means of a referendum,²⁴ pass provincial legislation, and request the federal government approve similar legislation. This approach to imposing a rule, therefore, creates a legal requirement for the provincial government to save a portion of non-renewable resource revenue that is more robust than a statutory rule and difficult to change. In other words, though such measures should be used cautiously and judiciously, there is an option for Alberta—or indeed any province—to impose more legally stringent rules on itself through a change in the national Constitution.

24. As Professor Bruce Pardy noted in a personal communication, this “requirement is statutory (the *Alberta Referendum Act*), not itself constitutional, so it could be changed or repealed in the same way as any provincial statute. If an amendment to the Constitution was passed as described and a future government wished to repeal the change without holding a referendum, then it could repeal the *Referendum Act*, and simply hold a vote in the legislature and request Parliament to do the same”. However, it is assumed that legislation passed by the provincial government that is based on a referendum would impose an informal constraint on future governments wishing to undo the requirement.

5 What Could Have Been—Illustrating the Opportunity for the Heritage Fund

Considering the relative success of Alaska’s Permanent Fund, it is useful to illustrate what the Heritage Fund could look like today had it been guided by a similar fiscal rule. First, however, it is worth noting that there are alternatives to using a fixed percentage rule for NRR contributions.

Perhaps most prominently, research by Ton van den Bremer and Rick van der Ploeg (2014)²⁵ recommends that NRR contributions should be designed so that future withdrawals are a constant fraction of total wealth, both “below-ground” (non-renewable resource revenue) and “above-ground” (cash and investments). To accomplish this, a variable savings rate is used to grow the fund to a pre-determined size each year (as a share of the economy). Importantly, this approach ensures that spending reacts only to permanent income rather than current income.²⁶

A significant disadvantage of this approach is that it is quite complex and would be difficult for average Albertans to understand. As this paper highlights, it is critical that the public understand the fiscal rule to establish a level of public support that will help insulate the rule from being changed or ignored by future governments. For this reason, Alaska’s fiscal rule is considered a better approach as it is relatively simple and straightforward. This section, therefore, uses a hypothetical model to demonstrate what the Heritage Fund’s value could be today had it operated under a mandatory 25% contribution rate and required earnings to be set aside annually to inflation-proof the fund similar to Alaska. Recall that any discussion of rules for withdrawal and/or use of the earnings will be the subject of the next paper in this series focused on the rules governing the Heritage Fund.

The analysis makes the conservative assumption that all earnings would have been withdrawn from the fund, except for those necessary to inflation-proof the principal. Inflation-proofing is calculated by multiplying the previous year’s fund equity by the growth in the Consumer Price Index (CPI). There is one year (2009/10) when Alberta experienced deflation and the CPI is negative. In this case, the CPI is converted to zero and no inflation-proofing occurs.

Earnings are sufficient to inflation-proof the fund in all but six years: 1977/78, 1978/79, 1979/80, 1981/82, 2001/02, and 2007/08. Consequently, only partial inflation-proofing occurs in these years. While this simple exercise makes no adjustment to

25. Van den Bremer and van der Ploeg (2014) use a fiscal framework similar to that provided by Basdevant, Hooley, and Imamoglu (2021) of the International Monetary Fund to inform their approach. Basdevant, Hooley, and Imamoglu include other important considerations for resource-rich countries to achieve sustainable fiscal policy, including transition strategies for countries looking to incorporate new fiscal rules.

26. For a review of the Permanent Income Hypothesis, see Landsburg, 2020.

provide full inflation-proofing for the fund in these years, it is worth noting that to do so would have increased the real value of the fund by \$1.5 billion (2019/20). Should a more stringent rule therefore be desirable, the government could require that when annual earnings are insufficient to inflation-proof the fund future excess earnings are set aside to make up for the shortfall.

Finally, no net income is set aside to inflation-proof the fund in years when there is an investment loss (2002/03 and 2008/09) and no future income is used to make up for that loss. If a more stringent rule is preferred, the government could require that when an investment loss occurs, positive earnings in future years are used to make up for that loss either through increasing the amount of NRR deposits or withdrawing a smaller share of earnings.

This analysis calculates total earnings using annual rates based on net income (loss) divided by fund equity at cost from the previous year. This gross rate of return is reduced by assuming a one-percentage-point fee to account for the fund's management and investment costs.²⁷ This approach is used as the government reports rates of return based on the fund's "fair value" (Government of Alberta, 2020c) rather than on "fund equity at cost", the valuation we use in this report.²⁸ To be clear, all earnings beyond those required for inflation-proofing are assumed to be withdrawn from the fund each year.

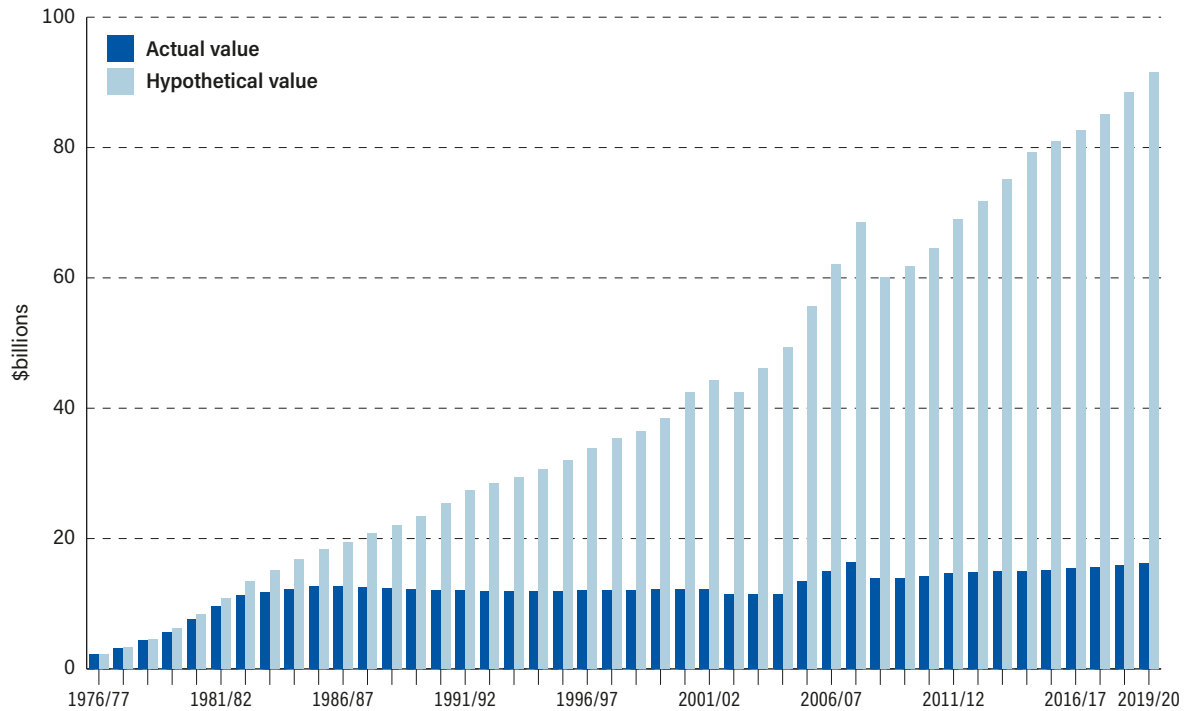
Recall that the discretionary rule that Alberta's Heritage Fund started with was actually more stringent than that of Alaska, requiring 30% of NRR to be contributed. For simplicity, this analysis maintains Alberta's initial contribution in 1976/77 and uses actual contributions through 1982/83. Contributions are set at 25% of all NRR starting in 1983/84. For simplicity, we include the discretionary deposits made from 2005/06 to 2007/08 (total of \$2.9 billion) as well as the advanced education endowment in 2005/06 and 2006/07 (total of \$1.0 billion).

Figure 8 compares the value of Alberta's Heritage Fund over time to the size of the hypothetical heritage fund under these conservative assumptions. As explained, the initial contribution of \$2.1 billion (1976/77) is maintained under the hypothetical fund. In every year after, however, the value of the hypothetical fund exceeds that of the Heritage Fund. From 1977/78 to 1982/83, the gap between the hypothetical fund and the actual fund is relatively small as the only difference between the two is that more earnings are retained (and less are distributed) under the hypothetical model to ensure inflation-proofing. The value of the hypothetical fund exceeds the value of the actual fund by \$2.0 billion in 1982/83. From 1983/84 to 1986/87, when contributions to the actual fund were reduced to 15%, the difference between the value of the hypothetical fund and that of the actual Heritage Fund widens. By 1986/87, the hypothetical fund would

27. For example, the rate of return for 2019/20 is 7.3% and is calculated as \$1.318 billion (2019/20 net income) divided by \$15.956 billion (2018/19 fund equity) less 1.0% (assumed fees).

28. Year-to-year rates of return will differ in the two approaches but we do not expect any significant long-term discrepancies. For example, the latest annual report shows a 10-year annualized net return of 8.4% and our approach shows an average net annual return of 8.7% over ten years.

Figure 8: Alberta's Heritage Fund—actual and hypothetical value (\$billions), 1976/77–2019/20



Sources: Finances of the Nation, 2021; Gov't of Alberta, 2020c.

have been worth \$6.7 billion more than the actual fund. Once actual contributions end entirely in 1987/88, the value of the hypothetical fund begins to exceed the actual fund by a significant amount each year.

Overall, the hypothetical fund would have grown at an average annual rate of 9.7%, compared to the actual Heritage Fund, which grew at an average annual rate of 5.4%. Under the hypothetical model, in 2019/20 the value of the Heritage Fund would have been \$91.6 billion rather than \$16.2 billion. Put differently, if Alberta had contributed 25% of all non-renewable resource revenue to the Heritage Fund beginning in 1983/84 and inflation-proofed the fund, it would be worth more than five and half times its current value.

The additional non-renewable resource revenue that would have been contributed to the Heritage Fund under the hypothetical fund is NRR that would not have been available to the annual budget. The intention of the fiscal rule is to temper the pressure for governments to increase spending during periods of comparatively high non-renewable resource revenue. A fiscal rule for NRR contributions alone, however, cannot stabilize volatile NRR in the budget nor mitigate the pressure for increased spending during periods of comparatively high NRR. There must, therefore, be additional supporting policies to stabilize NRR in the budget.

6 Stabilizing Non-Renewable Resource Revenue in the Budget—A Renewed Sustainability Fund

While requiring contributions to the Heritage Fund would help temper the pressure for the Alberta government to increase spending, particularly during periods of high NRR, such contributions do not change the volatility of non-renewable resource revenue. In an effort to address volatility, the provincial government has experimented with a number of different rules over time.²⁹

One of the most effective rules was introduced with the *Fiscal Statutes Amendment Act*³⁰ in 2003, which set the amount of NRR (\$3.5 billion) that could be spent annually, any excess to be saved in the newly created Alberta Sustainability Fund (ASF). The logic was that in years when resource revenue fell below the set amount revenue could be withdrawn from the fund to cover the shortfall. Consequently, it would act as a mechanism to stabilize and smooth the volatility of NRR over time.

The rule was somewhat vague and statutory in nature, which, as previously explained, made it easy to change. Indeed, the rule was relatively short lived. The \$3.5 billion stabilized amount was increased to \$4.0 billion in 2004/05, and increased again to \$4.75 billion in 2005/06. By 2007, nearly all NRR was used for annual spending and, by 2008, the Stelmach government began withdrawing money from the ASF to temper annual deficits (Morton and McDonald, 2015). The ASF was eliminated in 2013.

Despite the ASF's elimination, empirical research shows that stabilization funds are an effective means to reduce volatility in Alberta's finances (Landon and Smith, 2013).³¹ Further, many economists supported the use of a stabilization fund in the province. For example, Kneebone (2004) recommended the Alberta Sustainability Fund be maintained with an added feature that the ASF balance, which is required to be maintained at a certain level, be adjusted to account for inflation and population growth. Kneebone also recommended that the province deposit at least one third of non-renewable resource revenue in the Heritage Fund, and that any surpluses beyond this also be deposited in the Heritage Fund.³²

29. See Kneebone, 2006 for a full review of the history of Alberta's fiscal rules for treatment of resource revenue.

30. *Fiscal Statutes Amendment Act*, 2003, SA 2003, c. 2.

31. Landon and Smith (2013) use historical data to test the effectiveness of six hypothetical stabilization funds in reducing the volatility of government spending in Alberta. Each model reduced volatility to some degree, though some were more effective than others. The greatest result in terms of reducing volatility came from a fund with a 25% fixed deposit rate that withdraws real earnings: it was found to reduce volatility in spending by 30.6% compared to the actual historical path of spending.

32. An alternative approach is to deposit the entirety of NRR in the Heritage Fund and then design a

This paper explores one option based on a renewed sustainability fund with design features similar to those proposed by Kneebone (2004). The first step is determining a set amount of annual NRR to be included in the budget. Next, the required balance to be achieved in stabilization fund must be calculated such that the resources accumulated during times of comparatively high NRR are sufficient to finance the required contribution calculated in step one during times of comparatively low NRR. This analysis assumes that 25% of all NRR is earmarked for the Heritage Fund and deals with only the remaining 75%. Any discussion of NRR hereafter in this section refers to the remaining 75% unless otherwise stated.

This approach differs from the aforementioned options in that it ensures the government, bound by constitutional requirement, only has access to 75% of all NRR. Moreover, the mechanism used to stabilize NRR in the budget is separate and distinct from the Heritage Fund. Mathematically, this approach is the near equivalent of that suggested by Kneebone (2004). It would also be mathematically equivalent to depositing all NRR into the Heritage Fund and withdrawing the same stabilized amount for general revenue annually.

This section uses an illustrative example to demonstrate how a renewed sustainability fund, under a robust set of legal rules, could have worked to stabilize NRR over roughly the last commodity cycle, defined here as 2000/01 to 2023/24. Projections from *Budget 2021* (Government of Alberta, 2021a) are used for 2020/21 onward. The critical point is that these rules, or alternative rules developed by the government, create a standalone fund financed by NRR during periods of comparatively high NRR such that the accumulated ASF balance is sufficient to finance a given level of NRR in the budget during periods of comparatively low NRR.

The following illustrates how such a renewed Alberta Sustainability Fund would have operated. To determine the stabilized amount of NRR to be included in the budget, this analysis takes the average of annual NRR (75%) over the ten fiscal years preceding 2000/01, which is \$2.3 billion. The \$2.3 billion stabilized amount is adjusted by inflation each year.³³ The previous stabilized amount was determined by taking the average of NRR for the period from 1981/82 to 2001/02, excluding an unprecedented spike in revenue in 2000/01 (Government of Alberta, 2003). The approach suggested in this paper is similar to the methodology used in Alberta's previous Sustainability Fund, although there are alternatives available. Again, the key is establishing a set amount of NRR within the 75% limit that will be sustainably provided to the provincial government.

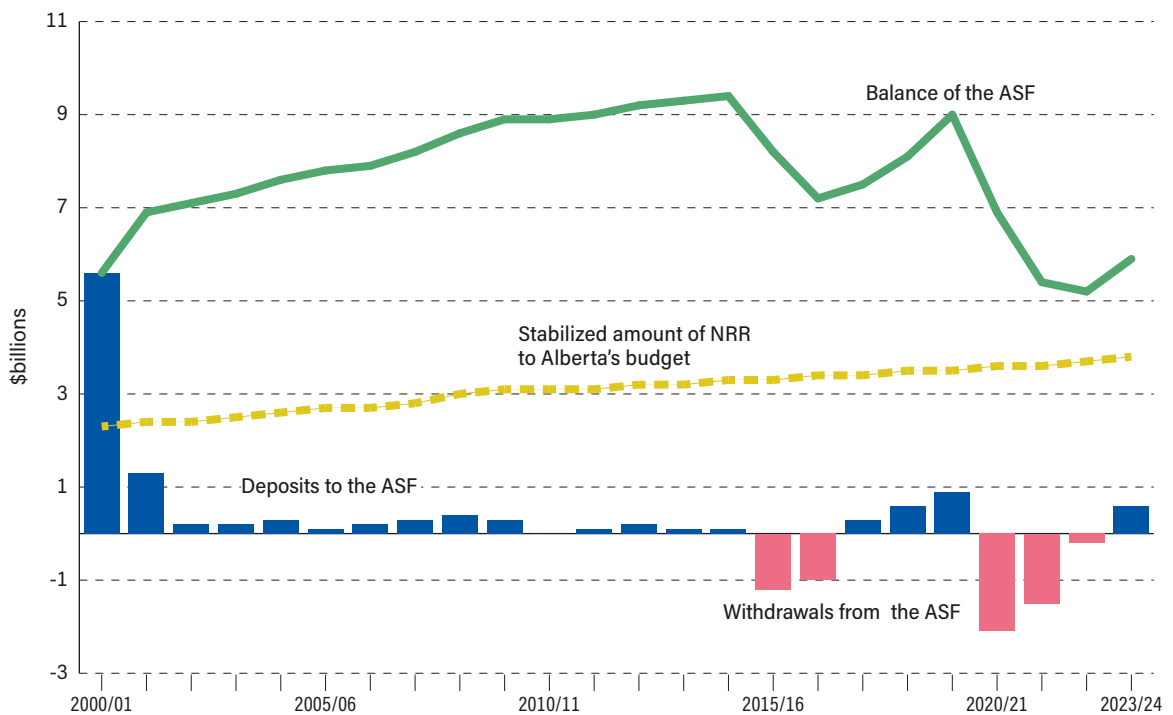
mechanism for contributions to the provincial budget from the Heritage Fund. A variation of this rule was proposed by the late Premier Jim Prentice, who suggested that 50% of annual NRR be earmarked for general revenues with the remaining 50% deposited in the Heritage Fund (Government of Alberta, 2015a; 2015b).

33. To emphasize, the specifics are not critical; the important point is that the fiscal rule achieves the set objectives. For instance, the stabilized amount could instead be adjusted both by inflation and by population growth. This analysis uses the inflation-adjusted stabilized amount for simplicity, in addition to the consideration that adjusting by population would suggest that NRR should increase as the population grows, despite the fact that NRR itself does not increase as the population increases.

To ensure that the renewed Alberta Sustainability Fund accumulates sufficient funds during times of relatively high NRR to provide resources available to be drawn down during periods of relatively low NRR, this analysis examined the period starting in 2000/01. During that period, five years would have required a withdrawal from the ASF to maintain the stabilized level of NRR: 2015/16, 2016/17, and 2020/21 to 2022/23. The analysis indicates that the balance of the ASF would have to be 2.9 times the stabilized amount of \$2.3 billion. The key is that the selected ratio of the target ASF balance relative to the stabilized level of NRR included in the provincial budget be sufficient to finance any deficiencies in the level of NRR included in the budget during periods of comparatively low NRR. The previous sustainability fund calculated its required balance by estimating the dollar amount of NRR that would be needed to protect against two consecutive years of low NRR, or one year of weak NRR and a major disaster (Government of Alberta, 2003). Critically, like Kneebone (2004), the proposed renewed Alberta Sustainability Fund would contribute all excess NRR to the Heritage Fund in periods when the ASF was sufficiently funded.

Figure 9 illustrates how the proposed Alberta Sustainability Fund would have operated starting in 2000/01. First, large deposits from non-renewable resource revenue would have been required in the first two years as the ASF’s balance was grown to meet its target value of 2.9 times the stabilized level (\$2.3 billion adjusted for inflation). Deposits from NRR from 2002/03 to 2014/15 would have been minor, ranging from \$0.1 billion to \$0.4 billion.

Figure 9: How the proposed Alberta Sustainability Fund would have stabilized provincial revenue (\$billions), 2000/01–2023/24

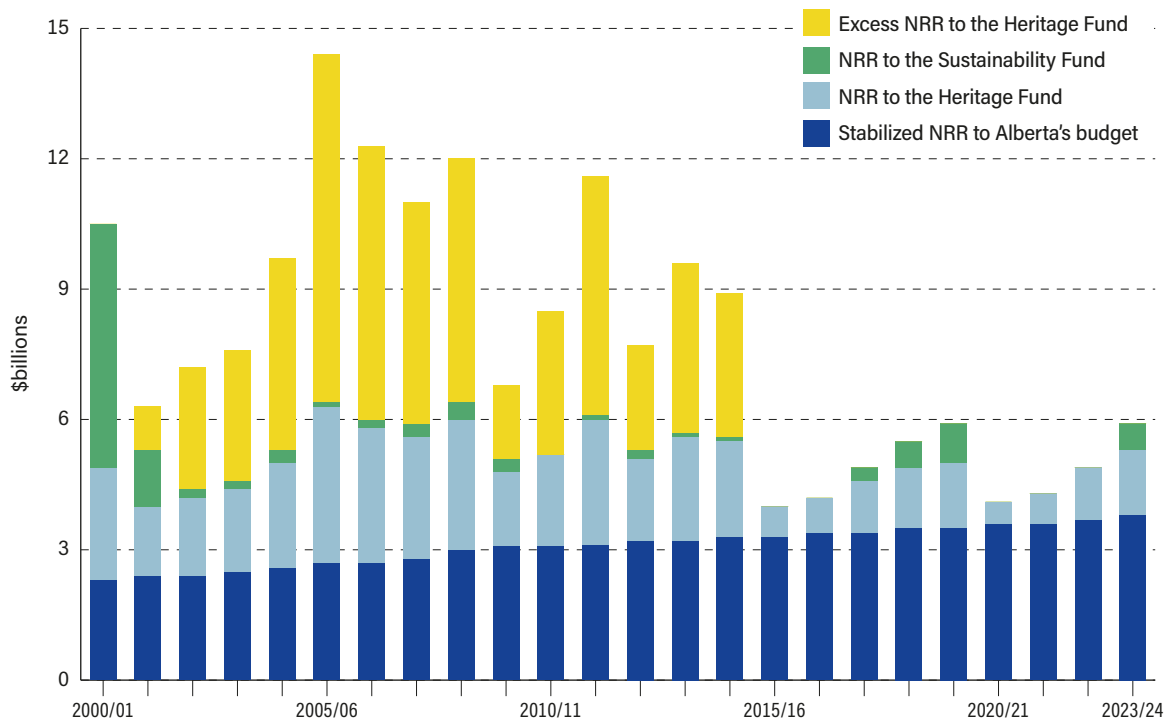


Sources: Gov't of Alberta, 2020b, 2021a; Statistics Canada, 2021b (table 18-10-0005-01).

In 2015/16, the actual NRR (\$2.1 billion) falls below the inflation-adjusted stabilized amount (\$3.3 billion) resulting in a withdrawal from the ASF. Specifically, \$1.2 billion would have been withdrawn from the ASF to finance the shortfall in NRR in the budget. Further withdrawals are made in 2016/17, 2020/21, 2021/22, and 2022/23 to make up the difference between actual NRR and the stabilized level. The dashed line illustrates how these fiscal rules result in a stable amount of NRR in the budget each year. The stabilized amount increases from \$2.3 billion in 2000/01 to \$3.8 billion in 2023/24, after adjusting for inflation.

Figure 10 presents the culmination of the proposed fiscal rules for use of non-renewable resource revenue over time, including 25% contributions to the Heritage Fund and a new Alberta Sustainability Fund to stabilize the amount of NRR provided to the provincial budget. A renewed Sustainability Fund, under carefully designed rules, would work to stabilize the amount of NRR in the budget, improving predictability and stability in provincial finances.

Figure 10: Non-renewable resource revenue (\$billions) to the budget, the Heritage Fund, and the renewed Alberta Sustainability Fund, 2000/01–2023/24



Sources: Gov't of Alberta, 2020b, 2021a; Statistics Canada, 2021b (table 18-10-0005-01).

Conclusion and Recommendations

Alberta's practice of including all non-renewable resource revenue in the annual budget has created instability for provincial finances. In periods with high non-renewable resource revenue, pressure is exerted on the provincial government to increase spending (as measured by real per-person program spending) to levels that are only sustainable with high resource revenues. When the inevitable downturn in the commodity sector comes, the provincial government's finances are thrown into deficits with spending levels that are not sustainable.

The Heritage Fund, as it was originally intended, could limit the inclusion of non-renewable resource revenue in general revenues and help to temper the pressure on the government to increase spending during periods when resource revenue was high. As demonstrated by history, however, without a robust legal fiscal rule requiring that some portion of NRR be deposited annually, it is unlikely that such contributions would consistently occur over time.

Further, contributions to the Heritage Fund alone will not solve non-renewable resource revenue volatility in the budget. The Alberta Sustainability Fund was designed to meet this objective by saving excess NRR during times of comparatively high NRR to be used to support the budget during periods of lower NRR. Similar to the Heritage Fund, however, history shows that such a mechanism will likely be ineffective unless it is grounded in a robust, legal fiscal rule.

It is time that Alberta consider a set of new fiscal rules to avoid repeating the mistakes of the past born by the cyclical ups and downs of non-renewable resource revenue. Lessons from Alberta's own history, paired with insights from Alaska's experience, leads to the following recommendations.

- (1) Alberta should adopt a robust, legal fiscal rule requiring that a portion of each year's non-renewable resource revenue be deposited in the Heritage Fund. Such a rule would both preserve a portion of the deposit as a financial asset creating a permanent stream of income over time, and limit the amount of NRR available to general revenues. Alberta previously contributed 30% and 15%, Alaska uses 25%, and some research indicates that the contribution should be as high as 50%. For the purposes of this analysis, 25% was suggested.
- (2) The Alberta Sustainability Fund should be re-established. The first step is setting a stabilized amount of annual NRR to be included in the provincial budget. This paper calculated \$2.3 billion, adjusted annually for inflation, based on the average of a ten-year

period. The renewed Alberta Sustainability Fund would have funds deposited during periods of high NRR up to a maximum value (2.9 times the stabilized level is suggested) to ensure that sufficient funds are available during periods of low NRR to provide the provincial government with stabilized NRR.

- (3) Third, any non-renewable resource revenue beyond that required to maintain the renewed Alberta Sustainability Fund at its set level would be deposited in the Heritage Fund.
- (4) Finally, to the extent possible, each fiscal rule proposed should be implemented as a constitutional rule to protect it from being easily amended or ignored in the future.

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