

B.C. BUDGET 2013
ECONOMIC & REVENUE FORECASTS—
REVIEW AND ASSESSMENT

INDEPENDENT REPORT TO
THE B.C. MINISTER OF FINANCE

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Summary

After an examination of the economic and revenue forecasts planned for the Budget 2013 plan of the Government of British Columbia and the supporting documents that underpin those forecasts, the conclusion reached is that economic and revenue expectations are generally well-founded.

They reflect the utilization of sound methodologies and processes, effective use of private-sector expertise and appropriate assessment of the risks to

the economic outlook and the associated revenue projections.

One specific revenue forecast, that for natural gas, warrants added caution and it is recommended that the natural gas price used for the revenue forecast be lowered to reflect that caution.

There are other recommendations made in the report that do not affect the budget's revenue forecasts, but are meant to improve the quality and transparency of future forecasts.

Introduction

The mandate undertaken for this report was to provide to the Minister of Finance of British Columbia an assessment of the economic and revenue forecasts to be used in *Budget 2013*. The assessment is to be based on an examination of the methodologies, processes and assumptions utilized to produce these forecasts. Time would not allow for the equivalent of an audit of the budget forecasts. Rather, the task undertaken was to evaluate the economic and revenue forecasts by applying the tests of reasonableness and probability of the expected budget revenue outcomes in the context of available information and analysis of the short- to medium-term economic outlook. It also involved utilizing the consultant's judgment based on expertise in economic and fiscal forecasting and budget analysis.

The approach used was to review the actual budget documents supporting the economic and revenue forecasts and all the background materials related to the key drivers of the economic outlook and of the major components of revenue. These components included the following:

- The econometric model used in forecasting by the Ministry of Finance was evaluated as were the processes used to formulate, revise and finalize the forecasts;
- Personal and corporate income taxes [PIT and CIT respectively], sales and property-related taxes, all natural resource revenues, fuel and carbon taxes,

federal government transfers, service delivery agency and crown corporation revenues.

- Officials from the ministries responsible for developing revenue forecasts – e.g., Finance; Energy, Mines and Natural Gas; Forests, Lands and Natural Resource Operations – made presentations on the processes and methodologies used to generate the budget projections.
- The sensitivities of the major revenue components to their main drivers – e.g., provincial employment and income growth, national and international economic growth, resource prices, etc. – were examined. Particular attention was paid to how key assumptions are established and to the degree of prudence/conservatism embedded in the forecast components.
- Staff from the Ministry of Citizens' Services and Open Government and the Ministry of Transportation and Infrastructure made presentations regarding the sale of surplus government assets.

The external reports and forecasts used by Ministry staff were examined as well as other sources with which the consultant is familiar. A list and assessment of downside and upside risks to key elements of the forecast was compiled and contrasted with what had been incorporated into the budget forecasts. Finally, areas of concern or uncertainty were probed with officials. Suggestions were offered with regard both to processes/methodologies and to assumptions.

Assessment of processes and methodologies

In general, the ministries involved in producing the components of the revenue forecasts follow approaches to

information gathering, analysis and forecast development that are comparable to that found in other jurisdictions with which the consultant is familiar [federal government, Nova Scotia and Ontario]. Rather than a recitation of the details of how forecasts are built in B.C. and elsewhere, what follows is a focus on the most noteworthy features of the approach in this province.

First, there is extensive and, to some degree, formalized use of outside expertise. The most obvious example of this process is the reliance on the Economic Forecast Council to provide private sector growth forecasts for key variables of the B.C. economy including real and nominal GDP, corporate profits, personal income, retail sales, housing starts, and employment as well as their unemployment rate forecast. The council is composed of leading economists from several of Canada's major banks and private research institutions. The first meeting of the council was held in 1997. By law, a report on the advice of the council must be included in each year's budget, under the Budget Transparency and Accountability Act (2000).

The council typically meets with the Minister of Finance in November/December as the budget is being put together for the upcoming fiscal year. The council's expectations are made public after the meeting and an updated set of forecasts, provided by each member, is included in the budget documents. There are currently 14 members of the council that give the minister and the ministry staff a comprehensive range of analysis and projections. The Ministry of Finance produces its own budget economic forecast; however, the average council forecasts are taken into consideration. Each member provides a three-year set of projections and an average forecast for another three years.

Besides the input from the council, the Ministry of Finance also uses private-sector forecasts (from the large Canadian banks

and Global Insight) for the Canada/US exchange rate, the Bank of Canada's overnight target rate, the Federal Funds rate in the US, and short- and long-term interest rates for Canada and the US. Given the importance of resource exports to the B.C. economy (about 70 per cent of BC's rest of world exports are natural resources) and to natural resource revenues, the Ministry of Finance also utilizes the GDP forecast (and other indicators) of the economies of the US, Europe, China and Japan. The domestic and international forecasts are used not only for the budget preparation but also through the year for monitoring potential impacts on the economic and fiscal outlook. The population forecasts that influence growth and labour market developments are provided by B.C. Stats, Ministry of Citizens' Services and Open Government.

Several of the ministries responsible for sector specific forecasts also make use of private sector forecasters. For example, the projections for natural gas prices which underpin the natural gas revenue forecasts rely on about twenty private sector forecasts of the North American markets. The Ministry of Energy, Mines and Natural Gas removes the highest and lowest projections and uses the average of the remaining as its gas price forecast. The forecasts for forest products utilize price forecasts of the North American markets by a group of six private sector firms. The forecast of forest products is determined through consultation with staff from the ministries of Finance and Forest, Lands and Natural Resources and is typically prudent compared to the private sector average. Staff in the Ministry of Energy, Mines and Natural Gas (MEMNG) track industry reports and metal price forecasts of twenty two private forecasters and typically inject prudence in determining the price outlook. MEMNG staff also track coal prices using international private-sector forecasters and industry reports, separating spot and contract prices in the determination of the average annual coal price outlook.

The ministries also rely on their own internal expertise on the sectors for whose production and prices they are responsible. They are in regular contact with the major companies in the sector and receive regular reports on the firms' performance and outlook for the relevant sector. This anecdotal information is integrated with published data and with the extensive experience of analyzing the sector that many officials have.

Each component of the budget revenues is tracked through the year and the fiscal forecasts are adjusted as required. There is ongoing monitoring of the key economic variables that affect the various revenue categories. The updates are provided formally and publicly in two reports, one in September that provides financial results for the first fiscal quarter along with revisions to the three year fiscal plan and economic outlook, and a second one in November that contains financials for the first half of the fiscal year and an update to the current year fiscal projections.

The Ministry of Finance uses an econometric model of the British Columbia economy to generate the five-year economic forecasts that are included in the budget and the First Quarterly Report. The inputs to the model include the "world" [Canada, U.S. , Europe, Japan, China] economic outlook, financial market [interest rates for Canada and the U.S. and the Can/U.S. exchange rate] outlook, commodity price outlook and government fiscal [i.e., spending] policies that affect the province's macroeconomic performance. Population and migration forecasts from B.C. Stats are also incorporated in the labour market segment of the model.

While there was not sufficient time to intensively examine the macroeconomic model, the working paper [available on the Ministry's website] describing the model's main features allows for a reasonable assessment of its quality as a forecasting tool. The model is a conventional one originally developed in the early 1990s by WEFA Canada [now Global

Insight] and Ministry of Finance staff. Until the recent Statistics Canada revisions to historical macroeconomic data for Canada and the provinces, the model could be linked to the Global Insight model of the Canadian economy. It is anticipated that, when the model is re-estimated with the revised data, it can again be linked to the national model. The equations in the model are reviewed after each forecast and the parameters are typically re-estimated annually by ministry staff in the Economic Forecasting and Analysis Branch (EFA). The fact that the model can be examined by academics and other specialists familiar with econometric models, suggests that it can stand up to expert scrutiny.

The only recommendation that I will make regarding the formal economic modeling part of the process is that, in addition to the annual internal re-estimation of the model's equations, the ministry consider having a periodic review of the entire model by an outside firm that specializes in designing/running such models. That would provide additional evidence of the robustness of the model as well as provide EFA staff with an opportunity for further professional development.

Assessment of assumptions

The assumptions about the economic variables that drive the main revenue forecasts are spelled out in several places in the budget documents [notably in Tables 1.2, 3.6.1 to 3.6.5 and A5]. The variables include growth rates for: real and nominal GDP, housing starts, personal income, corporate profits, retail sales, employment and population for British Columbia; real GDP for Canada, U.S., Europe, Japan and China and U.S. housing starts. Projections for the Canada/U.S. exchange rate, interest rates for Canada and the U.S. and natural resource prices are also provided. Some of these are inputs [exogenous variables] to the macroeconomic model while others are outputs from the

model. In all instances, the indicators are underpinned by [inputs] or compared to [outputs] private sector forecasts.

Because all economic forecasts are subject to various risks, both upside and downside, appropriate practice in budget formulation is to add caution to the assumptions to guard against the possibility that the overall balance target [whether deficit or surplus] will not be met. In particular, when negative risks are perceived to dominate, it is wise to shade downward the assumptions that affect revenue growth forecasts. That is currently the situation that virtually all governments are facing during this budget season.

In the revenue forecasts examined for the 2013/14 budget, there is a reasonable amount of prudence incorporated into the revenue driver assumptions. The budget document explicitly indicates one of these. In the tables contrasting the Ministry of Finance real GDP forecasts with those of the Economic Forecast Council, the outlook for GDP in 2013 is 0.5 percentage points below that of the council [1.6 vs. 2.1]; 0.3 in 2014 and 0.1 in 2015. Although not spelled out in the documents, the projections include prudence for an array of other revenue drivers. For example, the forecast for personal income growth is 0.3 points below the EFC forecast for each of the five years in the outlook; retail sales are about 0.2 points lower and pre-tax corporate profits assumptions are 2.2 and 1.8 points lower [2013 and 2014 respectively]. Comparable degrees of prudence are utilized for BC housing starts and employment growth. GDP growth rates of the external economies are also prudent compared to the *Consensus Economics* outlook.

As discussed there is some degree of caution incorporated into the price forecasts for wood products, metals and minerals in addition to the prudent exogenous assumptions such as U.S. housing starts and economic growth of the U.S. and other B.C. trading partners. Where private forecast averages are used as

the budget input, the only additional element of caution that might be added is that the highest and lowest price projections are eliminated from the average for each year. As discussed below in the forecast accuracy section, this has been a problem for natural gas revenue forecasts that have been overstated for five of the last six years. For the other natural resource revenues there has not been a persistent over or understatement of revenues.

In addition to the obvious categories of growth rates and prices, there is another type of important assumption built into the revenue projections of PIT—that is, the sensitivity of policy neutral PIT growth to personal income (PI) growth. There are clear cyclical patterns to the relationship. If stated as the percentage change in PIT with respect to the percentage change in PI [what economists refer to as the income elasticity of PIT], the long-term average value for B.C. is close to 1.4. That is, for every \$1 increase in PI, PIT will rise by \$1.40. In the long run, the impact of the progressive income tax structure combined with the tendency in recent years for income growth to be faster in higher income brackets yields an elasticity materially higher than 1. However, in slower growth environments such as we are currently experiencing, the elasticity - and hence the sensitivity - will be lower. That is why the income elasticity for PIT is assumed to be lower in the near term and rising gradually over the next several years towards the long-term average.

For most of the main revenue components, sensitivity indicators for the budget year are also disclosed in the budget and quarterly documents. These indicate the extent to which a particular revenue source will change in response to an adjustment in the value of key drivers of that revenue. For example, the biggest single influence on PIT revenue is personal income growth. The forecast of annual changes in personal income in B.C. is an output of the macroeconomic model for the province. The sensitivity of PIT to a +/- 1%

change in PI [$\pm$ \$75-100M] is provided in Table A5 of the budget documents. Examples of other critical revenue sensitivities include: CIT [$\pm$ 1% changes in current year national tax base and prior year B.C. tax base]; provincial sales tax [$\pm$ 1% change in taxable consumption and investment expenditures]; natural gas [$\pm$ \$.50 change in natural gas price]; stumpage revenue [$\pm$ changes in lumber, pulp or log prices, exchange rate and harvest volumes]; federal cash transfers of CHT and CST [$\pm$ 0.1% change in BC's population share].

The sensitivities are estimated based on the change in the specific model's calculation of the change in revenue ["output"] resulting from a change in a particular revenue driver [input]. The key point to be made about them is that they are not static values but can and do change over time. The key sensitivities are re-estimated with each forecast and indicate a range of possible impact reflecting an inherent degree of variability in outcomes. Hence, they should be treated as "rule-of-thumb" indicators that provide the reader with an assessment of potential revenue impacts based on an alternative set of underlying economic assumptions.

Since they are periodic rather than regular annual revenue items, there are no sensitivities associated with the sale of Crown assets. However, officials responsible for handling such sales indicated that assets will be sold at current market values. Two elements of caution are incorporated into this particular revenue projection. First, the revenue projections are based on 2010 assessed values which add up to more than the projected revenue. Second, the current market values of the assets are higher than the 2010 assessed values. This is done to avoid overestimating the returns on the sales.

The pattern for CIT displays a somewhat different cyclical profile. There is a tendency for corporate profits to "lead" taxation revenue during the turning points in the economic

cycle. As the economy turns down, profits begin to decline before personal income does and in the upturn, profits recover more quickly. The precise timing and pace of the adjustment is harder to predict and the sensitivities can display more volatility.

For natural gas revenues, the sensitivity to natural gas prices is complicated by the fact that the royalty rate differs over price ranges. That is, as gas prices fall below certain prescribed levels, the royalty rate falls as well. This process works in reverse as prices rise. As a result, the sensitivity assumed in the budget can be well off the mark if the actual price falls below the price range forecasted. The impact on forecast accuracy is dealt with further in the next section.

The sensitivities that are reported in the budget documents – especially those for large taxation revenues [PIT, CIT, sales tax] appear to be reasonable both from a conceptual or theoretical perspective and from knowledge of the elasticities used in the budgets of other jurisdictions.

The general observation to be made about the assumptions that underpin the revenue forecasts is that they incorporate, for the most part, a reasonable amount of prudence, especially given the degree of uncertainty that still surrounds the economic outlook not only for British Columbia but for North America and Europe and, indeed, the global economy. The one exception is for the assumptions used in the natural gas revenue projections, which are discussed below.

Forecast accuracy assessment

The one near certainty in forecasting is that almost any point estimate projection will be precisely wrong. The best one can hope for is that the actual outcome on any variable – e.g., income, employment, tax revenue – will be close to the level

predicted in the forecast. Many factors can intervene to throw a wrench into an expected outcome. A GDP forecast for a province like British Columbia can be higher or lower than anticipated because actions or events occur that had not been incorporated into the assumptions that underpin the projection. For example, most forecasters underestimated the severity and breadth of the downturn in 2008-09 that caused GDP to be considerably lower globally than expected, especially in the advanced economies. This affected virtually all facets of economic activity in the province, such as employment and income levels, exports, investment and household spending. This, in turn, caused government revenue projections to be significantly overstated relative to actual outcomes.

This is reflected in Table 1 (below) showing the variances [actual minus forecast] in the B.C. budgets from 2004/05 to 2011/12. Note the overstatement of taxation and overall revenues for fiscal 2008/09 which picks up the economic slowing that began in early 2008 and accelerated sharply later that year and continued into 2009. The negative variance is dramatically larger in fiscal 2009/10¹ but becomes a positive variance – revenue forecasts are understated – in 2010/11 as the global economic recovery strengthens. Unsurprisingly, significant revenue underestimation also occurs during the peak of the economic boom from 2005 to mid-2007². The general point with respect to taxation revenue is that turning points in macroeconomic performance [such as the severe recession of 2008-09] and unexpectedly strong growth [the continued global economic boom in 2005-2006] can throw off even the most rigorously executed forecast exercises. In other

¹ The negative variance for 2009/10 is based on the revenue forecasts done in February 2009 and not those in the 2009/10 budget that was brought down in September 2009.

² The positive variance for 2005/06 is based on the revenue forecasts done in February 2005 and not those in the 2005/06 budget that was brought down in September 2005.

words, no matter how well crafted the economic models or scrupulously considered the assumptions about key drivers, actual revenues can deviate materially from forecasted levels at such times.

TABLE 1

Table 1 Revenue Change from Budget¹

(\$ millions)	2004/05	2005/06 ²	2006/07	2007/08	2008/09	2009/10 ²	2010/11	2011/12
Taxation								
Personal income	45	636	1,058	567	(607)	(1,033)	(500)	65
Corporate income	362	351	201	855	695	(212)	811	58
Harmonized sales	-	-	-	-	-	-	392	(41)
Social Service & Other sales	7	260	341	182	(343)	(341)	(12)	34
Fuel	13	(4)	(22)	16	(66)	(30)	63	(36)
Carbon	-	-	-	-	(32)	(4)	14	9
Tobacco	23	15	36	(13)	3	(5)	48	(40)
Property	6	12	6	(68)	(13)	3	12	13
Property transfer	172	383	164	164	(305)	202	(45)	134
Corporation capital	60	47	(19)	7	39	41	(3)	(5)
Insurance premium	44	37	35	25	17	(4)	(5)	(2)
	732	1,737	1,800	1,735	(612)	(1,383)	775	189
Natural resource								
Natural gas royalties	226	366	(1,250)	(567)	149	(608)	(385)	(108)
Forests	364	134	193	(308)	(394)	(222)	(55)	(44)
Minerals	55	6	77	(36)	104	-	90	(110)
Other natural resource	(104)	143	110	61	266	(154)	(131)	(27)
	541	649	(870)	(850)	125	(984)	(481)	(289)
Other revenue								
Medical Services Plan premiums	67	40	110	60	24	75	46	(26)
Other fees	(24)	(81)	59	55	(80)	(65)	43	44
Investment earnings	(56)	106	213	225	(80)	45	(62)	5
Miscellaneous	256	258	457	357	56	279	193	(128)
	243	323	839	697	(80)	334	220	(105)
Contributions from the federal government								
Health transfer	200	32	43	(14)	(43)	(24)	6	(4)
Social transfer	(3)	44	27	(16)	(8)	(3)	5	(10)
Harmonized sales tax transition payments	-	-	-	-	-	250	-	-
Other federal contributions	688	218	587	418	231	324	301	141
	885	294	657	388	180	547	312	127
Commercial Crown corporation net income								
BC Hydro	(148)	(129)	389	5	8	(5)	(26)	(53)
Liquor Distribution Branch	19	21	42	48	37	(19)	(84)	(16)
BC Lottery Corporation	(31)	22	79	56	(19)	(84)	(10)	3
ICBC	347	15	250	408	240	341	20	(188)
Transportation Investment Corporation	-	-	-	-	(8)	(4)	12	(2)
Other	153	(61)	(46)	(46)	(33)	(34)	(2)	(5)
	340	(132)	714	471	225	195	(90)	(261)
Total revenue	2,741	2,871	3,140	2,441	(162)	(1,291)	736	(339)

¹ Results from the Public Accounts issued in that year

² Change from the forecast released on February 15, 2005 (2005/06) and on February 17, 2009 (2009/10)

While the key taxation revenues—PIT, CIT and sales taxes—have a comparatively stable link to key variables like GDP, consumer spending and income growth, there is an additional layer of complexity to forecasting PIT and CIT at the provincial level. These taxes are collected by the federal government and remitted to the provinces based on in-year estimates. The actual entitlement amounts may not be clearly known for a year or more after the fiscal year in question.

The taxation revenue forecasts have, on average underestimated actual outcomes over the 2004/05 to 2011/12 period. The average annual variance for the eight years is \$622M. It is worth noting that the size of the taxation revenue

understatement declined between the 2010/11 and 2011/12 fiscal forecasts and is estimated to be lower again for 2012/13.

This is consistent with the fact that the global economic outlook is stabilizing although downside risks persist. As stated above, I have concluded that the amount of prudence built into the economic forecast is appropriate to the level of risk to the forecasts for the major taxation revenue items.

While income and sales taxes are relatively closely tied to the province's economic performance and are consequently relatively more stable, natural resource revenues are inherently less stable and predictable. The factors that affect changes in the levels of such revenue are essentially external to the province's economic performance. Because natural resource prices are determined globally and output sold primarily in international markets, the value of resource income and the associated government revenues are subject to more varied influences—and more volatile influences—than are revenues linked to domestic economic performance.

The differences in volatility among total revenues, taxation revenues and natural resource revenues are illustrated in Charts 1-3. While the pattern of changes in total and taxation revenues is similar, the response of taxation revenues to economic cycles is somewhat more pronounced. This is in large measure due to the fact that there are other revenue components—notably federal transfers—that are relatively stable through upturns and downturns. Natural resource revenues fluctuate much more significantly than do total and taxation revenues and have a less predictable response to economic cycles.

Chart 1—Revenue Trend

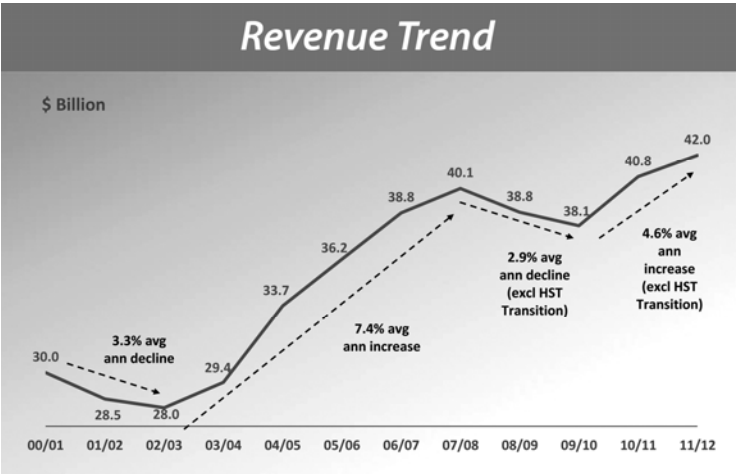


Chart 2—Taxation Revenue Trend

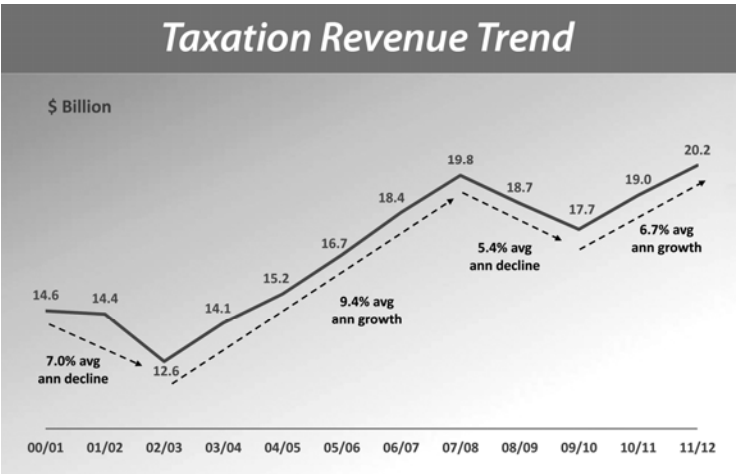
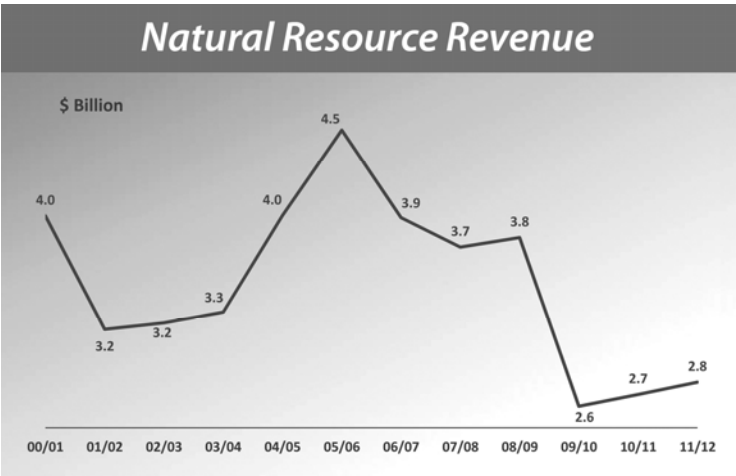


Chart 3—Natural Resource Revenue



The challenge to revenue projections from volatility in natural resource revenues is evident in Table 1. For example, while there was a negative variance for overall tax revenue in only two of eight years, there was overstatement of total resource revenues in five years and the average size of those negative variances was \$695M. As well, the impact of resource revenue volatility on the overall forecast accuracy is out of proportion to its share of total government revenue. Although it accounts for less than 10 per cent of revenues (compared to about 50 per cent for taxation) negative variances in resource revenues can offset (or more than offset) positive variances in taxation revenues. For example, in 2011/12, the negative variance on natural resource revenue of \$289M more than offset the positive taxation revenue variance of \$189M.

While the volatility in forest and mineral resource revenues has contributed to the total revenue overstatements, the problem is particularly acute for natural gas royalties. For minerals there have been two instances of negative variances in the past eight years but only one exceeded \$100M. Forest revenues were overstated in five of the eight years but, despite their persistence, the overestimates have declined in recent years. On the other hand, natural gas revenues have been over-projected in five of the last eight years and the average size of these negative variances is substantial [\$584M vs. \$205M for forests]. That is a key reason for my suggesting that the forecast for natural gas revenues be shaded down further in the upcoming budget.

Revenue forecasts for commodities are sensitive to assumptions about prices and volumes. Natural gas royalties are also affected by the adjustments in royalty rates that decline when prices fall below prescribed minima. In the current environment of lower than normal/historical prices, forecast risks are intensified by this sliding scale of rates. In fairness, the sliding scale offers an upside risk when natural gas prices are rising. That is, an increase can have a double-

positive impact on actual revenues. The key issue is what constitutes a reasonable forecast for natural gas prices over the next 3-5 years.

Production or volume forecasts have been fairly accurate in the last five years with slight underestimates in two years and slight over-projections in three years. On the other hand, prices have been significantly overestimated in each of the last four years and in six of the last nine years. [see Table 2]. It is important to reiterate that the Ministry of Energy, Mines and Natural Gas relies on price forecasts from a range of private-sector forecasters. It utilizes about 20 forecasts, eliminates the high and low ones, and uses the average of the remaining projections. There is an apparent tendency in this particular forecast area for the experts to “chase” prices as they trend up or down. That is, they tend to consistently underestimate future prices as they are steadily rising and to overestimate them as they are falling. In short, the problem of persistent negative variances for natural gas revenues is primarily attributable to the forecast patterns of the private sector sources used by the ministry.

TABLE 2

Table 2 Natural Gas Prices

(\$Cdn/gigajoule, plant inlet)

	Budget	Actual	Difference
2001/02	6.00	3.40	-2.60
2002/03	3.65	4.24	0.59
2003/04	4.75	5.06	0.31
2004/05	4.65	5.61	0.96
2005/06 ¹	5.71	7.58	1.87
2006/07	8.55	5.36	-3.19
2007/08	6.50	5.47	-1.03
2008/09	5.65	6.33	0.68
2009/10 ¹	5.87	2.96	-2.91
2010/11	4.29	2.61	-1.68
2011/12	3.02	2.15	-0.87

¹ Budget estimate based on the forecast released on February 15, 2005 (2005/06) and on February 17, 2009 (2009/10)

It is the case that natural gas prices were abnormally low last year and that the bottom occurred early in 2012 [March/April]. Since then prices have tended to move higher. The expectation that prices will remain higher than in 2012 and trend up in 2013 and beyond is not unreasonable. However, there are still significant downside risks to this forecast. Natural gas prices for North American producers are determined by supply and demand conditions in this region as consumption occurs in Canada and the US with limited exports to the rest of the world. The key demand-side risk is that the US economy remains sluggish. If the U.S. government is unable to effectively solve its fiscal challenges there is the prospect that growth could be even weaker than contemplated in current forecasts. The dramatic expansion in shale gas developments in both Canada and the U.S. could further dampen upward price movements [although that is an explicit factor incorporated into most natural gas price forecasts].

It must also be said that there are upside risks to gas prices although those are more in the medium-term. Increased exports via LNG to the rest of the world – especially to Asia where prices are currently five to six times higher than in North America – could generate substantially increased prices and revenues. Expanded use of natural gas for electricity generation and in transportation would also help push up prices. However, as these prospects will be manifest over the next several years, they should not be seen as a balance to the downside risks noted above.

Given the persistent overestimation of natural gas revenues in recent years and the material negative impact on total revenue expectations, it would be wise for the budget to incorporate price forecasts closer to the lower bound of the private sector forecast range than is contemplated in the projections that were reviewed. The lowest private forecast for natural gas prices in 2013 is \$1.77, the highest \$2.66 and the average (eliminating the high and low numbers) is \$2.13. If chosen, that

would imply a 46% increase over the average price for 2012. The recommendation is that the budget choose a price in the \$1.80- 1.90 range for the 2013/14 fiscal year. If, for example, a price of \$1.85 were used, the impact on natural gas revenues, relative to the average forecaster price, would be to lower them by about \$60M to \$70M. It is also recommended that a comparable degree of caution be incorporated into the price forecasts for the following years. This would provide a significant cushion for the natural resource revenue projections in the budget. As this has been a key source of total revenue overestimation in recent budgets, the additional prudence appears warranted.

General observations

After reviewing the processes and methodologies, formal modeling, formulation of assumptions and decisions on prudence used to generate the budget's revenue forecasts, I have concluded that there are no glaring problems or inadequacies that need to be addressed. There is ample evidence of professional competence, analytical rigour and appropriate caution applied in the work that goes into producing the revenue projections. I have suggested that, in one area of the forecast, additional prudence be incorporated into the natural gas revenue projections both for the upcoming fiscal year and for the out-years of the planning horizon. The recommendation was not based on any particular expertise I have regarding that sector. It stemmed from the fact that this particular revenue stream had been persistently overestimated in recent years and faces some significant downside risks.

To ensure that this is kept in reasonable perspective, it is worth noting that total taxation revenue, which constitutes about half of total revenues, has been, on average, underestimated even if you restrict the period examined to the last five years in which we experienced a severe recession and

a sluggish recovery [in B.C. and globally]. This speaks to the level of prudence that has been built into the revenue forecast approach.

In addition to the explicit prudence embedded in the economic forecast components, there are other cushions to protect the overall budget balance. These are the annual provisions for contingency spending and the sizeable forecast allowance.

In general, the economic and revenue forecasts are developed with a level of caution that is always necessary but is especially critical when a government continues to run a deficit and faces a medium-term economic future in which the balance of risks remains negative. The plan to eliminate a deficit requires that a reasonable degree of prudence be embedded in the revenue projections. It is my judgment that such a degree of prudence is evident in the documents I have had an opportunity to examine.
