J. S. Cheng & Partners Inc.

EXTERNAL REVIEW REPORT OF THE DCAT REPORT

ON

# BASIC COMPULSORY AUTOMOBILE INSURANCE

OF THE

# MANITOBA PUBLIC INSURANCE CORPORATION

AS OF FEBRUARY 29, 2012

Prepared by: Joe S. Cheng, F.C.I.A.
J. S. Cheng & Partners Inc.
1500 Don Mills Road, Suite 706
Toronto, Ontario, Canada M3B 3K4
Phone: (416) 510-8360
Fax: (416) 510-8359
E-mail: jscp@jscp.com

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## Purpose of the Report

Manitoba Public Insurance Corporation (hereafter referred to as “MPI” or “the Corporation”) is a Crown Corporation. MPI provides basic compulsory automobile insurance to Manitoba motorists. The purpose of this engagement is to conduct an external actuarial review of its Chief Actuary’s Dynamic Capital Adequacy Testing (“DCAT”) report for Basic Compulsory Automobile Insurance (Basic Auto) for the fiscal year ending February 29, 2012 in accordance with standards published by the Actuarial Standards Board (“ASB”) in Canada.

J. S. Cheng & Partners Inc. was engaged by the Corporation to conduct the aforementioned external actuarial review. Mr. Joe S. Cheng, a Fellow of the Canadian Institute of Actuaries (“CIA”) is the appointed reviewer for this External Review Report.

This document constitutes the External Review Report. Any questions regarding this report should be directed to:

Mr. Joe S. Cheng, F.C.I.A.
J. S. Cheng & Partners Inc.
1500 Don Mills Road, Suite 706
Toronto, Ontario, Canada M3B 3K4
Phone: 416-510-8360
Fax: 416-510-8359
E-mail: jscp@jscp.com

## Scope of the Report

The scope of this External Review Report includes a review of the Chief Actuary's DCAT Report for Basic Compulsory Automobile Insurance of the Corporation prepared by Mr. Luke Johnston, for the fiscal year ending February 29, 2012. The scope of this report is to:

1. Ascertain that the work of the Chief Actuary is within the range of accepted actuarial practice in Canada, as established by the ASB.

2. Review the appropriateness of the assumptions made and the methods employed.

3. Determine whether the DCAT Report accurately describes the assumptions and methodology employed by the Chief Actuary.

4. Review the adequacy of procedures, systems and the work of others relied on by the Chief Actuary. This includes checks on data integrity and checks on procedures and methodologies used to validate the calculations and results.

## Findings And Recommendations

The DCAT report is very comprehensive containing many supporting exhibits. It is easy to follow and many of the assumptions are documented. All findings were reported to Mr. Luke Johnston in correspondence dated October 11, 2012. My major findings and recommendations are:

1. In the Decline in Equity Markets scenario, selection of an adverse scenario is based on historical cumulative four year returns on the TSX from 1919 to present. However, MPI must review its future financial condition annually. In future DCAT reports the selection of Decline in Equity Markets adverse scenario should consider one year returns from the TSX.

2. In the Decline in Equity Markets scenario, the 40% decline is based on the approximate 95$^{th}$ percentile of historical cumulative four year returns on the TSX from 1919 to present; the actual 95$^{th}$ percentile return was -43.2%. Normally, plausible adverse scenarios would be selected in the 95$^{th}$ to 99$^{th}$ percentile range. In future DCAT reports, the actuary should select plausible adverse scenarios at a minimum 95$^{th}$ percentile (i.e., more than 43.2% decline in this case) if he should decide a four-year testing period is more appropriate than a one-year testing period.

3. Investment risk may come from a variety of sources including significant change in the yield curve, increase in the default rate on debt securities, and a decrease in returns and/or value of equities, real estate or other major asset categories. The Corporation has all of the above investments in its portfolio. In future DCAT reports, the actuary should consider an integrated scenario involving a combination of these events; correlation among the various investments should also be considered.

4. Most scenarios with major changes in expected claims should include a review of the Deferred Policy Acquisition Expenses (DPAE); such review often results in a

write down of the DPAE or even a premium deficiency. These actions would increase expenses on the statement of operations and reduce retained earnings. In future DCAT reports, the actuary should consider the ripple effect of changes in expected claims on DPAE and premium deficiencies.

5. Many items on the statement of operations that affect the net income are calculated using figures found on the Statement of Financial Position. Additional figures were requested and received from MPI in the course of my review. In future DCAT reports, Statement of Financial Position and other schedules of financial statements should be included as part of the supporting exhibits to assist the reviewer in validation of the model outputs.

6. As Basic Auto has long-term liabilities, it is always prudent to stress test a scenario in which its claims provision is understated by a reasonably high percent (e.g. 10%).

7. The definition of satisfactory future financial condition for the Corporation states that "if throughout the forecast period it is able to meet all its future obligations under the base scenario and all plausible adverse scenarios". I believe the threshold for failing this test should include monies available under the Accumulated Other Comprehensive Income section of Total Equity not just the Rate Stabilization Reserve ("RSR"). For the Corporation, this means any scenario involving changes in equity values should have the full impact accounted for in the first year either through realization of losses/gains or changes in AOCI account. Based on my modeling, the total equity remains greater than zero in all adverse scenarios tested.

   MPI and their Regulator should consider AOCI when determining satisfactory financial condition and when deciding whether to issue rebates and or surcharges, and MPI should include forecasts of AOCI as part of its DCAT output.

## Opinion

I have reviewed the 2011 DCAT Report for Basic Compulsory Automobile Insurance on Manitoba Public Insurance Corporation as prepared by Mr. Luke Johnston in accordance with accepted actuarial standards of practice in Canada.

In my opinion:

1. The work of the Chief Actuary is within the range of accepted actuarial standards of practice in Canada.

2. The assumptions and methods employed are appropriate.

3. The DCAT Report accurately describes the assumptions and methodology employed by the Chief Actuary.

4. The procedures and systems relied on by the Chief Actuary are adequate and sufficient to ensure an appropriate level of data integrity and the accuracy of calculations and results.

Joe S. Cheng, F.C.I.A.

October 16, 2012
Date of Report

## Data and Reliance

In the preparation of this report, I worked with Mr. Raul Martin, FCIA in our office.

In the preparation of this report, we have used the Corporation's annual financial statement and the draft DCAT Report for the fiscal year ending February 29, 2012 without an independent audit or verification. As supplementary information, we also used the Corporation's investment allocation exhibits which form part of the 2013 Rate Application. We started the review on September 11, 2012 when we received a copy of Mr. Johnston's draft DCAT Report.

## Distribution and Use

This report is intended for the Management of the Corporation and its Regulator. Its sole purpose is to provide an external review of the work of the Chief Actuary's DCAT Report for Basic Compulsory Automobile Insurance as at February 29, 2012. This report should be read in conjunction with the aforementioned DCAT Report.

This report may be distributed to any regulator in a jurisdiction where the Corporation operates or intends to obtain a license. Furthermore, the Corporation may distribute this report to its external auditor. Anyone else should be considered as a third party.

This report is neither intended nor necessarily suitable for any other use. Distribution beyond the parties mentioned in paragraph two is permitted provided that prior written consent is given by the Corporation.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. JSCP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Third party agrees to keep this report confidential.

## Limitations

In evaluating whether the future financial condition of an insurance enterprise is satisfactory, it is necessary to project future losses, operating expenses and investment income. It is certain that actual future losses, expenses and investment income will not develop exactly as projected and may, in fact, vary significantly from the projections.

Since actuarial estimates are subject to uncertainty with respect to future events, actual results may vary from the amount projected in the Statement of Financial Position. No warranty is expressed or implied that such variance will not occur.

It should be noted that forecasts deal with the inherent uncertainty of future contingent events. While I believe the actuarial projections made by the Chief Actuary represent a reasonable forecast based on the appropriate application of actuarial techniques to the available data, there can be no guarantee that the actual future results will not differ from the forecast stated in the DCAT Report.

My report was limited to a review of assumptions and methodologies underlying the DCAT Report of the Corporation as of February 29, 2012 including any tests of the calculations, as I considered necessary. I did not analyze the validity of any assets used to derive investment income on the income statement.

## Materiality

The standard of materiality is discussed in the DCAT Report. The Chief Actuary has selected a standard of materiality of $10 million based on a twice the Basic Appointed Actuary's Report materiality and the greater uncertainty associated with the DCAT projections. I believe this is a reasonable selection.

## Definition of Satisfactory Future Financial Condition

The Public Utilities Board (PUB) in Manitoba sets the minimum and maximum levels of Basic retained earnings for the Corporation. The Basic retained earnings, net of any special appropriations are defined as the Rate Stabilization Reserve (RSR).

The Corporation has a satisfactory future financial condition if:

1. It meets the minimum regulatory capital requirement under the base scenario; and
2. It is able to meet all its future obligations under the base scenario and all plausible adverse scenarios.

## Base Scenario

The base scenario assumptions are documented in supporting exhibits that are part of the DCAT Report. Only exhibits pertaining to the change in retained earnings and Rate Stability Reserve (RSR) are included as part of the financial statement supporting exhibits. The Corporation's base scenario is consistent with its experience and is reasonable.

## Adverse Scenarios

The DCAT Report identifies three scenarios posing the greatest risk to satisfactory financial condition. In addition, the report indicates that there are no other scenarios that would cause the Corporation to fall below the minimum regulatory capital requirement. The three scenarios identified as posing the greatest risk to satisfactory financial condition are:

1. Decline in Equity Markets

   This scenario assumes equity values decline 40% in 2013/14 and remain at that level for the remainder of the forecast period. The selected decline is based on the approximate 95$^{th}$ percentile of historical cumulative four year returns on the TSX from 1919 to present. It is assumed that 67% of these losses are realized in the first year due to regular turnover rates and impairment write downs, and the balance are realized in the following year. This scenario is reasonable.

2. Combined Scenario (Claims Incurred and Equity Decline Scenario)

   This scenario uses stochastic simulations of both a decline in the Equity markets and High Loss Ratio scenarios to develop an integrated scenario. At the 99$^{th}$ percentile, this scenario assumes a 30.4% decline in equity assets and a $56 million increase in claims incurred. This scenario is reasonable.

3. High Loss Ratio

   This scenario assumes an increase of $67 million to the base incurred losses, $8 million in claim expenses, and $6 million due to discounting and actuarial provisions. It is assumed that the increase in claims is mainly due to an increase in PIPP claims severity. Simulation based on a normal distribution was used to arrive at the deviation from the base forecast. Ripple effects include a $5 million reinstatement premium in 2013/14 due to a $44 million hail storm. This scenario is reasonable.

The methodology and assumptions employed by the Chief Actuary are appropriate.

## Description Of Assumptions And Methodology

The DCAT Report accurately describes the assumptions and methodology employed by the Chief Actuary.

## DCAT Model

The DCAT Report relies on a model to do the required DCAT investigation. The model is very detailed. The scope of my work excludes a detailed validation of the financial model. However, I did some testing of the model and believe the model is producing reasonable results.

## Adequacy Of Procedures, Systems And The Work Of Others Relied On By The Chief Actuary

I have detected no material issues to be reported on.

## Conclusion

The report is prepared in accordance with accepted actuarial standards of practice in Canada, as established by the ASB.