# Mean Reversion Model to Adjust Excess Compensation

**ROD P. BURKERT,**
CPA/ABV, CVA
and
**BOB DOHMEYER,** ASA

Burkert Valuation Advisors, LLC
Philadelphia, PA
rod.burkert@burkertvaluation.com

Adjusting entity-level earnings to develop control and minority interest values is now a generally accepted business valuation practice. This is a good thing in that it frees appraisers from using control premium studies data – which in the aggregate, measure a combination of strategic control, financial control, and hubris – and extrapolating implied minority interest discounts from those studies.[1] It's a bad thing in that not all appraisers agree about the extent of the adjustments that should be made to entity-level earnings.

Fill in the blank: Excess officer compensation is a _____ adjustment.[2] We feel confident in saying that an overwhelming majority of the BV industry would say "control" and that a small minority would say "normalizing." We believe that an adjustment for officer compensation has elements of both control and normalization. And the purpose of this article is to present an alternative model to adjust excess compensation— something that's in-between the all-or-nothing treatment in current practice.

First, let's look at the rationale for making excess compensation a control adjustment. In the fair market value world, the most prevalent view is that a minority interest lacks the power to change compensation policy; so not adjusting compensation can serve as a proxy for a minority interest discount. In the real world, a sophisticated buyer of a minority interest whose worth is affected by excess compensation would, most likely, estimate value in the same fashion.

That's it— those two arguments. We're big fans of less is more, so maybe that's all that needs to be said. But just a thought. We've seen cases where the control shareholder paid himself less than a market value salary. So would the practitioners who believe excess compensation is a control adjustment similarly not increase such below-market compensation because the minority shareholder cannot change the practice, even though this would result in a larger minority interest value?

Normalization adjustments are required to develop an entity-level (not an interest-level) minority, marketable value. The parenthetical "as-if freely traded" language in levels of value charts emphasizes that earnings are normalized to where they would be if our private company was public – it does not require that our private company have the potential to do so.

So with that framework in mind, what are the arguments for treating excess compensation as a normalizing adjustment? Turns out there are several.[3]

1. Minority shareholders in public companies also lack control over officer compensation. But they expect normalized operations, and generally, they get it.
2. Not adjusting for excess compensation implies, vis-à-vis a terminal value calculation or market multiples, that a minority shareholder will be disenfranchised into perpetuity and never receive his pro rata value, even if/when the company is sold.
3. Discount rates based on market data and multiples obtained from public companies are derived from normalized earnings and should be applied to private company earnings that are similarly adjusted to a public-equivalent basis.
4. If we start with entity-level earnings that are not adjusted to a public-equivalent basis, we are at some fictitious "being taken advantage of minority, marketable" level of value.
5. Discounts for lack of marketability are deducted from the minority, marketable level of value, not a "being taken advantage of" level of value.
6. Couldn't a rational hypothetical investor sue under a state's shareholder rights statute if it was being deprived of its pro rata value because of excess compensation?

It's been our experience that many excess compensation cases arise in businesses that are "family-owned" rather than those that are "closely held." And in the family-owned cases, there seems to be a "nod-nod, wink-wink" atmosphere where control and minority owners know the compensation is excessive, but no one questions the practice (assuming no intra-family acrimony) because it's mom or dad.

But at the extreme, what if excess compensation takes the cash flows of our private company down to zero. Would we submit a report to the IRS claiming a zero value for a minority interest? Few, if any, appraisers would. So when does excess compensation become egregious enough where we feel the need to draw the line

*Continued on next page*

**expert TIP**

**We believe that an adjustment for officer compensation has elements of both control and normalization.**

and make an adjustment? Because once we admit that a line needs to be drawn in some cases, we might as well do it in all cases.

One method of handling excess compensation lies in Chris Mercer's Quantitative Marketability Discount Model (QMDM). In a nutshell, Mercer advocates normalizing entity level earnings for excess compensation but then adjusting a minority shareholder's projected interim cash flows (in absolute dollars or its rate of growth) for this factor, i.e., "leakages" in QMDM's vernacular. So when practitioners lament that QMDM produces a large marketability discount, recognize that it is applied to a fully adjusted entity-level benefit stream and may include an adjustment for excess compensation, which QMDM treats as a factor affecting the marketability, not the lack of control, of a minority interest.

And now we present another alternative based on the concept of mean reversion. Let's look at the various components of our model, which are presented on pages 11 and 12.[4]

## INITIAL DATA/ASSUMPTIONS

This section lays out the basic information for a generic valuation.[5] Nothing novel— except for introducing the concept of "acceptable excess compensation." Given that people tend to resolve ambiguity in their favor, this would have the control owner tending toward (or "mean reverting" toward) overpaying herself by some percentage– 20 percent is used in the model for illustrative purposes. The percentage can be adjusted by the appraiser to consider how much in excess from market value would compensation have to be before a minority shareholder would feel oppressed and inclined to threaten litigation.[6] In our model, we're saying actual compensation is $200,000, market compensation is $150,000, and a minority shareholder would tolerate as much as $180,000 ($30,000 acceptable excess compensation over $150,000 market).

## MEAN REVERSION ADJUSTMENT

Looking more complex than it is, this section develops a probabilistic adjustment for the actual excess compensation as it reverts to the acceptable level of excess compensation over time. We ran this computation out 30 years to simulate capturing the decaying probability into perpetuity. For information purposes, we show that the present value of this calculated excess compensation is $211,000.

## COMPANY SALE ADJUSTMENT

The sale of the company would truncate excess compensation and allow a minority shareholder (or an interim buyer of a minority interest) to realize his pro rata value of the business. Thus, this probabilistic adjustment reduces the excess compensation calculated in the step above to an expected value of the excess compensation. The present value of the mean reversion of expected excess compensation is $132,000. Again, we ran this computation out 30 years to simulate perpetuity, and a Gordon Growth calculation could be employed after a given number of years.

## CONCLUSION

The present value of the mean reversion of expected excess compensation of $132,000 is subtracted from the control, marketable value of $500,000, which is determined using the market level of compensation. The result is a $368,000 minority, marketable value and an implied minority interest discount of 26 percent. To complete the valuation, an appraiser would need to apply a discount for lack of marketability using methods deemed appropriate.

## COMPARATIVE RESULTS

This last section shows the extent of undervaluation by the school of thought that believes 100 percent of the actual excess compensation is a control adjustment versus this model that treats the present value of the mean reversion of expected excess compensation as a normalizing adjustment. Given our assumptions, an undervaluation of $138,000, or 32 percent, occurs.[7]

So there you have it. And here's a recap of the model's advantages:

1. Some amount of the excess compensation is recognized as a normalizing adjustment, providing a better estimate of entity-level earnings.
2. A minority shareholder's value is not penalized into perpetuity for the excess compensation that exists as of the valuation date.
3. The minority, marketable value is a real world minority, marketable value – not a fictitious "being taken advantage of minority, marketable" value.
4. The implied minority interest discount is easily determined, whereas the discount is masked when all of the excess compensation is treated as a control adjustment.
5. The under-compensation issue noted earlier in this article can be just as easily handled as an excess compensation problem.

If you would like a working copy of the model, please email *rod.burkert@burkertvaluation.com* or *bdohmeyer@fairvaluecorp.com*.

[1] A minority interest discount is derived from control premium information using the formula: MID = 1 – [1 / (1 + CP)]

[2] For the purpose of this article, "officer compensation" includes related benefits and discretionary expenses of a control shareholder.

[3] As far as I know, Chris Mercer was the first to argue these points. See *Mercer Capital Value Matters*™, September 24, 2004; *Business Valuation: An Integrated Theory*, 2nd edition, John Wiley & Sons, Inc., 2008; and an April-May 2011 series of blog posts at *Valuation-Speak.com*.

[4] For presentation purposes, we simplified the model by considering only after-tax earnings and determining value using the capitalization of earnings method.

[5] A great source for obtaining objective officer compensation data is from an executive recruiter who has knowledge of the relevant market.

[6] Relatively speaking, the percentage should be smaller for smaller companies because the amount of over compensation becomes a larger percent of profits and more painful to a minority shareholder. Likewise, the percentage should be larger for larger companies because the amount of over compensation becomes a smaller percent of profits and less painful to a minority shareholder.

[7] Note that the smaller the acceptable excess compensation percentage, the greater the undervaluation effect will be.

## MEAN REVERSION MODEL TO ADJUST EXCESS COMPENSATION

**CLICK HERE to see the 30-year full model beyond Year 6 or go to *www.valuationproducts.com/featuredarticles.html***

| Initial Data/Assumptions: | | | | | | | |
|---|---|---|---|---|---|---|---|
| Officer compensation - actual | $200,000 | | | | | | |
| Officer compensation - market | 150,000 | | | | | | |
| Actual excess compensation over market | $ 50,000 | | | | | | |
| Times: Acceptable excess compensation over market - % [1] | 20% | | | | | | |
| Equals: Acceptable excess compensation over market - $ | $ 30,000 | | | | | | |
| | | | | | | | |
| Company revenue | ######### | | | | | | |
| Company expenses [2] | 900,000 | *Using market compensation of $150,000* | | | | | |
| After-tax earnings | $100,000 | | | | | | |
| | | | | | | | |
| Equity discount rate | 23.5% | | | | | | |
| Long-term sustainable growth rate | 3.5% | | | | | | |
| Equity capitalization rate | 20.0% | | | | | | |
| | | | | | | | |
| **Mean Reversion Adjustment:** | | 1 | 2 | 3 | 4 | 5 | 6 |
| | | | | | | | |
| Years for acceptable excess compensation to revert [3] | 5 | | | | | | |
| Annual reversion % [4] | 20% | | | | | | |
| Expected value factor [5] | | 80% | 64% | 51% | 41% | 33% | 26% |
| | | | | | | | |
| Mean reversion factor [6] | | 20% | 36% | 49% | 59% | 67% | 74% |
| Times: Acceptable excess compensation less actual excess comp | $ (20,000) | (20,000) | (20,700) | (21,425) | (22,174) | (22,950) | (23,754) |
| Equals: Mean reversion of excess compensation differential | | (4,000) | (7,452) | (10,455) | (13,092) | (15,430) | (17,527) |
| Plus: Actual excess compensation [7] | $ 50,000 | 50,000 | 51,750 | 53,561 | 55,436 | 57,376 | 59,384 |
| Equals: Calculated excess compensation before company sale adjustment | | 46,000 | 44,298 | 43,106 | 42,344 | 41,946 | 41,857 |
| Present value (mid-year convention, rounded) [8] | $211,000 | | | | | | |
| **Company Sale Adjustment:** | | 1 | 2 | 3 | 4 | 5 | 6 |
| | | | | | | | |
| Years until expected sale of company [9] | 10 | | | | | | |
| Annual "chance" of sale occuring [10] | 10% | | | | | | |
| | | | | | | | |
| Cumulative probability of company not selling [11] | | 90% | 81% | 73% | 66% | 59% | 53% |
| Times: Calculated excess compensation before company sale adjustment | | 46,000 | 44,298 | 43,106 | 42,344 | 41,946 | 41,857 |
| Equals: Expected value of excess compensation | | 41,400 | 35,881 | 31,424 | 27,782 | 24,769 | 22,245 |
| Present value (mid-year convention, rounded) [12] | $132,000 | | | | | | |
| | | | | | | | |
| **Conclusion:** | | | | | | | |
| | | | | | | | |
| Control, marketable value [13] | $500,000 | *Using market compensation of $150,000* | | | | | |
| Less: PV of mean reversion of expected excess compensation | 132,000 | | | | | | |
| Equals: Minority, marketable value | $368,000 | | | | | | |
| Implied minority interest discount [14] | 26% | | | | | | |
| | | | | | | | |
| **Comparative Results:** | | | | | | | |
| | | | | | | | |
| Company revenue | ######### | | | | | | |
| Company expenses [15] | 950,000 | *Using actual compensation of $200,000* | | | | | |
| After-tax earnings | $ 50,000 | | | | | | |
| | | | | | | | |
| Minority, marketable value [16] | $250,000 | *Using actual compensation of $200,000* | | | | | |
| Minority, marketable value | 368,000 | *Using mean reversion of expected excess compensation of $132,000* | | | | | |
| Undervaluation - $ | $118,000 | | | | | | |
| Undervaluation - % | 32% | | | | | | |

## Notes regarding the model:

[1] Based on professional judgment of the appraiser, given factors such as the egregiousness of the actual compensation, the company's historical performance, and the dollar amount of profits.
[2] Normalized, using market compensation of $150,000.
[3] Based on professional judgment of the appraiser, given factors such as the industry, company growth prospects, and the current and future expected number of minority shareholders.
[4] 1 divided by number of years from [3].
[5] Year 1 = 1 - Annual Reversion %; Year 2 and forward = prior year % times (1 - Annual Reversion %).
[6] 1 minus the Expected Value Factor from [5].
[7] Assumed to grow at the long-term sustainable growth rate of the company.
[8] Present value of the calculated excess compensation before the company sale adjustment. Compensation is assumed to be paid evenly throughout the year.
[9] Based on professional judgment of the appraiser, given factors such as industry M&A activity, potential for company IPO, and age/health of control shareholder.
[10] 1 divided by number of years in [8].
[11] Year 1 = 1 - Annual Chance of Sale Occuring %; Year 2 and forward = prior year % times (1 - Annual Chance of Sale Occuring %).
[12] Present value of the mean reversion of expected excess compensation. Compensation is assumed to be paid evenly throughout the year.
[13] Determined using Gordon Growth Model: after-tax earnings divided by capitalization rate.
[14] Assumes all minority interest discount is reflected in the benefit stream.
[15] Normalized, using actual compensation of $200,000.
[16] Determined using Gordon Growth Model: after-tax earnings divided by capitalization rate.