The Credit Suisse – Archegos Blowout

Advanced Corporate Finance 2

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by

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Introduction

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Section 2

Causes For The Fiasco

In the previous parts we discussed how overleveraged and risky the positions was. It is clear that leverage of the position take a further look on how the leverage was achieved and more imporatntly , whatmistakes the RM department might have done, resulting in this riksy positions blowing up.

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Valuation - Did The Market Overreact?

In this section, we will try to estimate the intrinsic value of Credit Suisse in relation to the share price first before the Archegos blowout with data from 31.12.2020 and then after Archegos, using all available data published by Credit Suisse, Bloomberg estimates and our own calculations.

For the valuation, we will use a simple peers-multiple comparison as well as the Equity Excess Returns model, presented in the book *Investment Valuation* by Aswath Damodaran.

Equity Excess Returns (EER)

Since valuing financial services companies, such as banks, is rather different given their unique financing capital structure, we will be using the EER model. It bypasses the standard problem of defining total capital or free cash-flows of a financial services company by not taking them into account at all and focusing only on equity.

From there, the logic of standard valuation methodology is consistent with other valuation methods, meaning that the value is determined as the sum of equity capital invested currently (Book Value) and the *present value of expected excess return to equity investors.* (Unless stated otherwise, we are presenting all values and calculation on a *per share basis* and in Swiss Francs)

$$\text{Value of Equity} = BV_{t-1} + \sum_{t=1} \frac{\text{Equity Excess Return}_t}{(1 + \text{Cost of Equity})^t}$$

While book value of the firm is virtually given and can be read off of the financial statements, EER are the part we have to calculate and impose certain assumptions and limits, which we will discuss further in the next part.

Before we do that, let us first show how EER is calculated:

$$EER = (ROE_t - \text{Cost of Equity}_t) \times BV_t$$

The intuition behind this calculation is very simple: the excess return to the equity of the firm is everything the firms earns on its equity/capital invested (Book value) minus the cost necessary to use to produce those returns.

Moreover, we need to know or rather estimate the book value of the firm for each year. That we can do, under certain assumptions, by adding net income net of dividends (retained earnings) from the previous year to the book value from the previous year. The assumption is that those retained earnings will be added to book value and further reinvested, producing more earnings.

$$BV_{t+1} = BV_t + EPS_t \times (1 - \text{dividend payout ratio})$$

Standard Assumptions of the Model

Book value as a measure of equity capital invested

We assume that book value of the firm is equal to the equity capital invested. While it certainly might be influenced by accounting decision and procedures, the fact we are using it for financial services company makes it a sufficiently reliable measure. This stems from the fact that:

- most assets of a financial services firms are financial assets and are marked up to market, which makes the valuation precise
- depreciation, which is normally a big factor influencing book value of manufacturing firms, is negligible with financial services firms.

Discount rate

Since we are focusing only on equity and the excess returns of equity, the most consistent approach for discounting is to discount these excess returns with the cost of equity. One of the assumptions is that this rate remains constant, i.e. we are able to use the same discount rate for the whole valuation.

Number of periods

Per default, this model calculates EER only till year 5 and assumes that after year 5, the cost of equity will converge to ROE, making EER zero in perpetuity, thus setting the terminal value to zero as well. We will see, however, that in our case this assumption will be modified.

Constant ROE

Unless we have forecasts of earnings, we assume ROE to be constant across the whole period in order to estimate future earnings, setting it equal either to the value of the last period or using a slightly more sophisticated long-term average and mean reversion method.

Constant dividend payout ratio

When calculating retained earnings, we subtract the dividend from the net earnings. Not many firms have a strict dividend policy of setting a fixed dividend payour ratio, which is why we will again have to assume that the ratio will remain constant and equal to its long-term average.

Our setup - Before Archegos (31.12.2020)

Book value(s)

The first book value comes from the the filling of Credit Suisse obtained from Bloomberg as of 31.12.2020. From there, we calculated the subsequent book values as explained above.

EPS / Net income

For the first three years, i.e. 2021, 2022 and 2023, we used the the consesus of analysts forecast of the EPS. We feel this approach is more precise than using a constant ROE as in the base model, given the fact Credit Suisse is a stock followed by roughly 300 analysts.

From year four, we grow the earnings by Sustanaible Growth Rate, which is calculated as 10-year average of ROE net of long-term dividend payout ratio. This is method works under the assumption that Credit Suisse will be able to reinvested the retained earnings effectively. In our case the sustainable growth rate was at 1.4%, stemming from 10-year ROE average of 2% and dividend payout ratio of 28.2%, which is both conservative and attainable in our opinion.

Equity cost

We obtained value of 11.5% from Bloomberg and assume it remaind constant across the whole period.

Terminal value

The biggest difference between the standard model and our case is that Credit Suisse has a much lower ROE than cost of equity (effectively destroying value by producing negative excess returns), thus it would be unreasonable to assume convergence as in the standard model. For the convergence to happen, either ROE would have to increase or cost of equity would have to decrease dramatically, which is the exact opposite of the intuition of diminishing returns.

Because of this, we will have to estimate EER also in perpetuity by using the Gordon's Growth Model. However, since we have negative excess return in the future, we flip the sign of the growth rate in the denominator, producing this formula:

$$EER_{perpetuity} = \frac{EPS_T}{\text{equity cost} + \text{sustainable growth rate}}$$

Valuation Table

Table xx: Equity Excess Returns Valuation Table as of 31.12.2020 for Credit Suisse

Year	2021	2022	2023	2024	2025	TV
Book Value / Share	17.37	18.37	19.55	20.76	21.99	23.24
Net Income / Share	1.40	1.64	1.69	1.71	1.74	1.76
Equity cost in %	11.50%	11.50%	11.50%	11.50%	11.50%	11.50%
Equity cost / Share	2.00	2.11	2.25	2.39	2.53	2.67
Equity Excess Return Per Share	-0.60	-0.48	-0.56	-0.67	-0.79	-0.91
Present Value	-0.536	-0.385	-0.403	-0.436	-0.458	-7.016
Sum						-3.651

Table xx: Estimated Intrinsic Value of Credit Suisse Stock in Relation to Market Price as of 31.12.2020

Book Value / Share	17.36955637
Sum of EER PV	-5.86801365
PV	11.50154272
Price (31.12.2020)	11.4
Undervaluation	0.89%

From the valuation and the table above, we can see that our estimated value before the Archegos blowout is almost precisely at the the traded price as of 31.12.2020 with a difference, or undervaluation, of only 0.89%.

Our setup - After Archegos (31.3.2021)

Now we move on to the valuation of Credit Suisse *after* the Archegos blowout, where we will observe how the present value changed and if, at all, the market over- or underreacted, according to our valuation.

In the setup, we will discuss only assumption and inputs different from the previous setup, i.e. if not stated otherwise, the assumptions are the same.

Equity cost

After the blowout, when Credit Suisse reported huge losses and the stock fell considerably, the cost of equity must have increased. We used CAPM to calculate it and again assumed it to remain constant across the valuation period.

The inputs obtained from Bloomberg were:

- Risk-free rate: 10y note of Switzerland; -1.4%
- Equity premium: 9.06%
- Beta: 1.42

Beta was obtained using JACOPO PLS HELP HERE

These inputs yielded a justifiably higher cost of equity of 13.45%. In perpetuity however, we assumed it would return to normal "pre-Archegos" level of 11.5%.

This rate was used to calculate the perpetuity EER, whereas *the discount rate used was again the higher, 13.45% value to reflect riskiness of the stock today.*

Valuation Table

Table xx: Equity Excess Returns Valuation Table as of 31.3.2021 for Credit Suisse

Year	2021 (as of March)	2022	2023	2024	2025	TV
Book Value / Share	18.23	18.77	19.81	20.96	22.13	23.32
Equity cost in %	13.45%	13.45%	13.45%	13.45%	13.45%	11.50%
Equity cost / Share	2.45	2.52	2.66	2.82	2.98	2.68
Equity Excess Return Per Share	-1.8	-1.1	-1.1	-1.2	-1.3	-1.0
Present Value	-1.648	-0.835	-0.722	-0.716	-0.703	-7.735

Year	2021 (as of March)	2022	2023	2024	2025	TV
						-3.63

Table xx: Estimated Intrinsic Value of Credit Suisse Stock in Relation to Market Price as of 31.3.2021

Book Value / Share	18.23
Sum of EER PV	-8.251
Estimated price	9.97
Price (31.3.2021)	9.90
Undervaluation	0.73%

According to our valuation, we can see we arrive to intrinsic value that is almost precisely at the price from the end of March, with undervaluation of .73%. Assuming our inputs are correct and assumptions full-filled, we can conclude that the market reaction to the Archegos blowout was appropriate.

Section 5

Conclusion

References