Impact of the Russia-Ukraine Conflict on Cost of Capital Assumptions

Kroll regularly reviews fluctuations in global economic and financial market conditions that may warrant changes to our equity risk premium (ERP) and accompanying risk-free rate recommendations. The risk-free rate and ERP are key inputs used to calculate the cost of equity capital in the context of the Capital Asset Pricing Model (CAPM) and other models used to develop discount rates. We also update country risk data on a quarterly basis for 175+ countries using various models.

In December 2021, despite some uncertainty regarding the impact of the omicron variant of COVID-19, the global economy appeared to be on a strong path to recovery, although with some unevenness across regions. Major central banks were considering some level of normalization of monetary policy, both by slowing down (or stopping altogether) quantitative easing (QE) measures and by raising policy interest rates, particularly as inflationary pressures proved to be more than transitory in many countries. On January 3, 2022, the S&P 500 index achieved a new record high, while two days later the STOXX Europe 600 reached its own record high. At that time, we began discussing when and under which circumstances it might be appropriate to *lower* our recommended ERPs for the U.S. and the eurozone.

Since January 2022, global equity markets have become more volatile as investors tried to ascertain the magnitude and speed at which central banks would raise interest rates, leading to a potential decrease in the value of companies in various industries due to an increase in discount rates. In addition, tensions between Russia and Ukraine—which had been rising since late 2021—culminated in Russia's initiation of an armed conflict with Ukraine on February 24, 2022. Country risk measures for these two countries have surged, but the increase in risk has extended to other markets and indicators. In the case of Europe, the VSTOXX (the volatility index on the EURO STOXX 50 index) has reached levels last observed back in April 2020, at the height of the COVID-19 crisis. Severe economic sanctions were imposed against Russia, which has contributed to a significant rise in the prices of oil, gas and other commodities such as precious metals (e.g., palladium, platinum, silver, gold), base metals (e.g., aluminum, nickel) and agricultural products (e.g., fertilizer, wheat). Ukraine and especially Russia are large producers of some of these commodities and the current conflict is further exacerbating global supply chain shortages and adding to inflationary pressures. Several multinationals, banks and advisory firms have closed or suspended operations in Russia. Economists have begun downgrading global real economic growth projections for 2022, with Europe being particularly impacted due to its higher exposure to Russia and Ukraine, and especially since it was already suffering from an energy crisis prior to these events. The current situation is fluid and the longer-term impact on the global economy and financial markets will depend on how protracted/widespread this conflict ultimately will be. In general, this heightened uncertainty will have a negative impact on the valuation of investments globally, especially on businesses generating cash flows in those geographies and in industries most affected by the shortage of commodities and rising prices. The uncertainty generated by these events warrants a reevaluation of cost of capital assumptions.

Cost of Capital Recommendations

- **United States: The Kroll Recommended U.S. ERP remains at 5.5%,** matched with a normalized risk-free rate of 2.5%, implying an 8.0% (= 2.5% + 5.5%) base cost of equity capital, until further notice. We last changed the Recommended U.S. ERP on December 9, 2020, and this recommendation was re-affirmed at year-end 2021. We will continue to closely monitor the situation and publish new guidance if and when appropriate.

- **Eurozone (from a German investor perspective)**: The current Kroll Recommended Eurozone ERP remains in the *range* of 5.5% to 6.0%. However, based on current economic and financial market conditions, we believe **that a 6.0% ERP is more appropriate when developing EUR-denominated discount rates as of March 14, 2022, and thereafter**, until further guidance is issued. This ERP guidance should be used in conjunction with a normalized risk-free rate for Germany of 1.5%, resulting in an implied EUR-denominated "base" cost of equity capital estimate from a German investor perspective of 7.5% (= 1.5% + 6.0%). Incremental country risk adjustments for other eurozone countries with a sovereign debt rating below AAA may be appropriate.

- **Russia and Ukraine:** Given the exceptional level of risk caused by the armed conflict, we performed an interim update of country risk indications for Russia and Ukraine using our three supported models, both for USD- and EUR-denominated projections. The results are shown in the exhibit below. The following caveats are noted regarding these estimates:

  - The data was updated prior to the imposition of severe sanctions on Russia, which may further increase the indicated country risk estimates for Russia. Likewise, a protracted conflict will likely lead to an even higher country risk indication for Ukraine and Russia in the near to medium term.

  - The three supported models shown in the exhibit below are defined differently and, accordingly, react to changes in short-term risk at varying degrees of speed. For example, the inputs for the country yield spread model can potentially be obtained daily (depending on data availability), thereby reflecting changes in investors' risk perceptions very rapidly. On the other hand, the country credit rating model and relative volatility model are heavily dependent on time series data, which tends to mitigate the short-term volatility of changes in country risk.

  - Periods of market upheaval may lead to a surge in country risk indications in the near-term under some models, which may be considered excessive when estimating discount rates to value businesses over the long run. Finance professionals should monitor how the current situation evolves and consider using more than one model to quantify country risk, given that no methodology is perfect or universally accepted.

Exhibit: Russia and Ukraine Country Risk Indications in USD and EUR
December 2021 vs. February 2022

U.S. Investor Perspective (in USD)

Russia

Model	12/31/2021	2/28/2022	Change
Country Yield Spread	1.7%	11.5%	9.8%
Country Credit Rating	3.3%	3.6%	0.3%
Relative Volatility - Simple	1.59	2.17	0.58
Relative Volatility - Complex	1.54	1.98	0.44
Recommended U.S. ERP *	5.5%	5.5%	0.0%

Ukraine

Model	12/31/2021	2/28/2022	Change
Country Yield Spread	7.4%	23.0%	15.6%
Country Credit Rating	4.7%	4.8%	0.1%
Relative Volatility - Simple	1.78	1.98	0.21
Relative Volatility - Complex	1.59	1.61	0.02

* The Kroll Recommended U.S. ERP of 5.5% should be used in conjunction with a 2.5% normalized risk-free rate.

German Investor Perspective (in EUR)

Russia

Model	12/31/2021	2/28/2022	Change
Country Yield Spread	2.6%	11.7%	9.1%
Country Credit Rating	3.4%	3.7%	0.3%
Relative Volatility - Simple	1.38	1.94	0.56
Relative Volatility - Complex	1.44	1.91	0.47
Recommended Eurozone ERP **	5.5%	6.0%	0.5%

Ukraine

Model	12/31/2021	2/28/2022	Change
Country Yield Spread	8.0%	23.2%	15.2%
Country Credit Rating	4.8%	4.9%	0.1%
Relative Volatility - Simple	1.51	1.74	0.23
Relative Volatility - Complex	1.46	1.53	0.07

** The Kroll Recommended Eurozone ERP is in the range of 5.5% to 6.0% from a German investor perspective, to be used in conjunction with a 1.5% normalized risk-free rate. The point estimate indicates at each date where the ERP indication lies within that range: low end (5.5%) in December 2021 vs. high end (6.0%) in February 2022.

Click here to download the above exhibit.

For correct application of these models, refer to the Resources Library of the International Cost of Capital Module in the Kroll Cost of Capital Navigator.

Note: These Russia and Ukraine country risk indications (as of February 28, 2022) represent an interim update to our country risk analyses and will not be reflected when using the International Cost of Capital module, which only presents data updated through quarter-end. The next update to the country risk models that will be reflected in the International Cost of Capital module will be as of March 31, 2022.