

# Ergonomic Mechanical Keyboards

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EMK designs, produces and sells computer keyboards. Its products are sold to manufacturers (B2B) or directly to the public. In 2020 the CEO decides to launch a new range of ergonomic keyboards, specially designed for IT professionals like programmers and system administrators. These people typically use keyboards all day long, know touch-typing and agree to pay a higher price for comfort, reliability and efficiency.

The new model, called the EZ01, will start selling in 2021. It will be a split keyboard, with blank keycaps, wireless and totally configurable. Its public price will be 290 euros.

The EZ01 will be produced in a dedicated workshop near the main factory. Building the workshop would cost 264,000 euros, and the necessary machinery is estimated to 155,000 euros. The building and the machinery will be depreciated straight line to zero, over 12 years for the building and 5 years for the machinery.

The gross margin on a keyboard is 20% and the fixed costs are estimated to 76,000 euros per year. The additional net working capital required on the project is negligible.

EMK is not listed, but the following information is available about its competitor ZSB which is listed on a small caps market: it has currently 14 million common stocks outstanding, and the stock price is 1.35. The beta of ZSB is 1.72. Three years ago, ZSB issued 100,000 bonds for 15 years, with a 100 euros face value, and a 5.1% coupon rate. The bonds will be repaid at par, and their YTM is 4.06% now.

Regarding EMK, it is estimated that its leverage is 27%. It can currently borrow at 5.08% per year.

The project will last 4 years, after which a new model will replace it. At that time, the machinery will be worthless and the workshop building will be estimated to 80% of its book value.

Finally the tax rate on profits and capital gains is 40%, the risk free rate is 0.62% and the expected market return 7.4%.

1. Assuming EMK sells 2,800 EZ01 keyboards every year, what would be the yearly operating cash flow? (in euros, no decimal places)
2. What is ZSB's bond current price? (in euros, 2 decimal places)
3. Calculate EMK's cost of equity (in %, 2 decimal places)
4. What is the required rate of return to use on the investment project? (in %, 2 decimal places)
5. With the sales of question 1, 2,800 keyboards per year, what would be the NPV of the project? (in euros, no decimal places)
6. How many EZ01 keyboards should be sold every year to get a zero NPV? (no decimal places)
7. How would you interpret the previous answer?
8. What would be your recommendation to EMK regarding the project?
9. EMK is considering borrowing 251,400 euros to finance the project. The loan would be repaid by constant annuities over 11 years. The interest rate would be the rate at which the company can currently borrow. What would be the constant annuity value? (in euros, no decimal places)