FINAL THESIS REVIEW

Thesis type: **Bachelor**

Student (name and surname): **Tomáš Novák**
Opponent: **Mgr. Tomáš Talášek**
The topic of the final thesis: **Algorithmic trading strategies focussed on currencies**

1. Difficulty of the thesis in:

Theoretical knowledge	**standard**	~~high~~
Input data and its elaboration	**standard**	~~high~~
Applied methods	~~standard~~	**high**

2. Evaluation of the thesis:

Criterion	Evaluation grade (acc. to SC UP)					
	A	**B**	**C**	**D**	**E**	**F**
Level of reaching the thesis goal(s)		X				
Logical construction of the thesis		X				
Amount of student's own contribution in comparison to the amount of taken information		X				
Suitability of applied methods		X				
Work with resources including citations			X			
Layout of the thesis (text, graphs, tables)			X			
Stylistic level, grammaticality				X		
Applicability of the thesis conclusions in practice				X		

3. Questions to answer during the defence (eventually remarks of the opponent):

The thesis focuses on algorithmic trading strategies in the context of currencies. The main goal is stated as *to backtest algorithmic trading strategies on three types of technical indicators: Stochastic oscillator, CMF indicator and EMA indicator. The backtesting process will be implemented on a 4-hour interval historical data. The backtesting and calculation process of selected indicators will be made in Microsoft Excel.*

Firstly, the thesis is much easier to read then previous version (this is a revision), but there are still some issues: 1) the text still deserves a proofreading (e.g. page 8: After the calculation process, three strategies are going tested.). 2) Some cited publications are not in the references (e.g. page 15: Foreign exchanges market, Forex centres with a corresponding zone, 2019). 3) Author uses comma

as a decimal separator, 4) captions of figures are short and not self-supporting. 5) The subsections are sometimes confusing. In section 4 (technical chart indicators), each subsection presents one indicator (e.g. 4.1 EMA). However, these subsections are grouped into four groups which behave as subsection, but are not numbered. I believe, that it will be more readable to change the numbering in the following way: Section 4 – technical chart indicators, Subsection 4.1 – Trend, subsubsection 4.1.1 EMA, 4.1.2 TEMA.

Theoretical part consists of 3 sections: FOREX, Currencies and Algorithmic trading. Author presented what Forex is, explains how the currency pairs work, why did he select EUR/USD and USD/JPY pair and presented advantages and disadvantages of algorithmic trading.

In the practical part author introduces several indicators, which are organized into groups and commented them. Mathematical formulas are unfortunately not ideal and would deserve proper explanations (e.g. what is variable i in SMA formula?; where we get the first EMA_0 in EMA_N formula?; why there is no N in MFM formula, but it is in MFV_N and ADL_N formulas?.

The methodology section follows, where the author presents Excel sheets used for the calculations for each indicator. I have two comments – for each indicator the sheets are slightly different. This is understandable, but at least the buy/sell part should be identical for better comparison. Also, the figures contain Czech words (PRAVDA and NEPRAVDA). The following section explains on Figures 6.0 – 6.5 how the strategies work in an understandable way. Honestly, I really like this part of the thesis, because it could be useful for other students.

In the final part, the results for each strategy are presented in the tables and commented. However, the data for buy & hold strategy are not presented (there is only mentioned, that strategy in both cases resulted in high losses). And finally, there is no final comparison of the strategies/results – this is a crucial issue, because this could improve the thesis significantly. Currently it is on the reader to make this comparison.

In conclusion, the goal of the thesis is fulfilled, but the missing comparison of final results ruins the thesis.

I have the following questions:
1) On page is 14 is stated *"It is possible to make money even though the market stagnates"* – how?
2) Figures 2.0 and 2.1 presenting daily price movement represents different time period (therefore are not suitable for comparison) and comes from different sources – why?
3) On page 13 is stated *"These instruments are naturally connected to one another or in some way they are influenced by each other. For example the mutual relationship between Swiss franc and Gold. When the exchange rate of the first asset moves the second **should move the same way**. When the Swiss franc **increase** and the price of gold **decreases**, both assets should converge to each other in future."* – can you explain this a little bit further?
4) Which from the strategies is the best one (based on the data in the thesis)? Would you decide to invest your money using this strategy?
5) The formula for EMA_N states, that the value of EMA_{N-1} is needed. How could we obtained the first EMA_0?

4. The thesis **is** recommended for the defence.

5. Suggested classification grade: **C**

Place and date   Signature of the opponent