

**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

**Faculty of Economics and Management**

*Department of Economics*



Bachelor Thesis Abstract

**INFLUENCE OF GOLD PRICE UPON  
ENVIRONMENTAL QUALITY**

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## **SUMMARY**

This bachelor thesis examines whether the price of gold can affect environmental quality. In the first part is a literature review as an introduction to the issue of air pollution associated with gold mining using mercury. The second chapter is the analytical part, which is further divided into several sections. Crucial part of this thesis is in the first subchapter, where the author was ascertained by using regression analysis, whether there is any relationship between the variables of air mercury pollution in relation to artisanal and small scale and large scale gold mining and gold production. Another regression framework demonstrates the dependence between gold production and the price of gold. It continues with technical analysis to predict the gold price with the help of moving averages. The last part of the analytical chapter proposed various solutions to reduce mercury pollution from gold mining. The aim of the thesis is to determine whether the price of gold may negatively affects the quality of the environment and suggests possible solutions.

**KEY WORDS:** gold production, mercury pollution, price of gold, artisanal and small scale gold mining (ASGM)

## **OBJECTIVES**

Name of this bachelor thesis Influence of Gold Price upon Environmental Quality reveals one of the main objectives, which are to identify relationships between air mercury pollution and production of gold and also quantify relationship between gold production and price of gold, using the regression analysis. Another aim of thesis is focused on technical analysis of gold price through the tools of Simple and Exponential Moving Averages. Last chapter of analytical part is to evaluate use of environmentally friendly technologies in gold mining. It is focused on improving techniques for artisanal and small scale gold mining and government based possible solutions.

## **METHODOLOGY**

For composition of this thesis were used several methods. Firstly the literature review was written by the artist as an introduction to the issues related to the importance, history, and the use of gold as well as its price and mining in relation to air mercury pollution. For the part of

literature review were used methods of induction, deduction, extraction and synthesis from specialized literature, abstracts, articles and other electronic sources.

Data for chapter of analysis were collected and compiled from different sources. Data of air mercury pollution were adapted to sector of artisanal and small scale gold mining and also for large scale sector. These data were collected from EDGAR - Emission Database for Global Atmospheric Research, where the author get an access from Dr. Sergio Cinnirella, the Cyber(e)-infrastructure Responsible in GMOS (Global Mercury Observation System) via e-mail conversation. Raw data were received in .txt format, than transformed and processed by using Microsoft Office Excel 2007. Time period was 39 years of observation from 1970 until 2008. There were various amounts of samples, between 32,250 to 55,034 samples per year. Therefore data were processed as an average for each year. Other data for gold price and production of gold were gathered from different statistical databases available on the Internet, than processed again with the use of Microsoft Office Excel 2007. The resulting tables of regression framework of relationship between gold price, production of gold and related mercury pollution were calculated by Gretl version 9.1.13 win32.

Technical analysis of gold price and its future prediction with application tools of moving averages were processed by using Advinion Professional Chart available on Investing.com.

## **RESULTS AND CONCLUSION**

### **Regression Analysis Summary**

With the first regression framework was found that there is a relationship between average global air mercury pollution from ASGM + LS as dependent variable and gold production aka independent variable. Results also show quite strong  $R^2$  reporting 90.6 %. Very interesting is the finding that if the production of gold increases by 1 tonne the average global air mercury pollution from ASGM+LS increases by 4.92e-06 tonnes.

The second part of the regression analysis was to investigate the dependence between price and gold mining in last 44 years. However, it must be taken into account low value of  $R^2$ . According to results, it is statistical significant so there is a relationship between these two variables. Can be said, if the price of gold increase by 1 USD/ounce, than the gold production increased by 0.7824 tonnes per year. This is especially crucial outcome of this work. Previous regression showed that gold production is in dependence on the mercury pollution and now it

is known that the production of gold is associated with the price of gold. Therefore, it may be assumed that the price of gold affects environmental quality.

### **Technical Analysis Summary**

In the technical analysis was examined development in the gold price using tool of moving averages. Firstly with SMA, it can be clearly seen uptrend in gold price since 2009 as a result of the financial crisis until 2012, where it is the tipping point and gold started its predominantly downward trend. The latest data shows again signal to sell the gold, because the price of gold is below its MA. Hence, it can be assumed that the gold price continue to decline. The same tendency also shows a graph with EMA.

### **Possible Solutions for Reducing Mercury Use Summary**

In chapter focused on solutions to reduce air mercury emissions from gold mining, was suggested several solutions. Firstly there is a technical solution directly orientated towards improvement in the concentration phase in ASGM. The most important design is usage of shaking tables, which separate gold particles from lighter sediments. While the use of shaking tables require additional method for the extraction of gold still it is very effective.

The last part deals with the solution coming under the government. Author suggests, for example, high taxes for the use of mercury or a partial or even complete ban of free usage. However, it cannot be forgotten, that the artisanal and small scale gold miners would use method which is the most economical for them.

Thus, for overall summary, the higher is gold price the greater are risks to environment, depending on expanding gold mining. The question is whether, mostly developing countries focusing on gold production will be willing to accept more environment-friendly technology of mining, while the demand for gold is still increasing.

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