# Are Safe Havens really safe?

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## 13th April 2020

**\*\*Please note that following exploration of Four Square API it had limited usage in my location (Australia) as there is limited data and most places have not had reviews since 2013 or before. I therefore decided to look at another data science problem for which I could gather rich data and still use the different learnings from across the specialization as well as the geographical mapping. Below is the link to my Notebook to GitHub with the completed work\*\***

https://github.com/ThoughtLiberator/Data-Science-Project/blob/master/Investing%20with%20Assets%20.ipynb

# 1. Introduction

## 1.1 Background

There is a common saying in the financial markets that when there are market shocks there is a flight to safe havens. There are a number of safe havens that are commonly referred to when the money leaves the riskier assets. The difference between the risk assets and the safe havens should be considered. Risk assets are traditionally equities both in developed world and emerging markets. In addition most of the commodities are also considered riskier assets. The attraction of investing in the risker assets is that they can offer greater returns. However, during the times of market turmoil such as the GFC and the Current COVID-19 pandemic the losses can be significant.

On the other hand safe havens are assets that are not expected to appreciate significantly in the time of growth however they do offer a degree of protection during the market downturns. Examples of safe havens are bonds (particularly government issued i.e. US, Australia, UK), money markets, Gold, Japanese Yen and Swiss Franc.

There are many variations and possibilities of both the risk assets and safe havens. For the purposes of the project a range of Stock market Indices were picked covering Australia, Asia, Europe and US to serve as proxies for the risk assets. For the safe havens Gold, Japanese Yen and Swiss Franc were picked (the reasons and the deep dive will be covered in the Data section of this report).

## 1.2 Problem

Whenever one switches on a financial channel such as CNBC or Bloomberg or perhaps reads about the market performance during the time of a crisis they are bound to hear pundits, analysts, reporters, talk show hosts, bankers and others involved the finance say the phrase "flight to safe

havens". The idea is that safe havens will hold their value or even appreciate during the times of crisis (the logic would then also hold that they would underperform during the growth times). The common wisdom has it that Japanese Yen, Gold and Swiss France are the pre-eminent "safe havens" and one should invest their money there in the time of the crisis. The purpose of this project was to check if this approach is indeed correct and by extension if one believes that a risk asset i.e. US equities will underperform should they be investing the safe havens

## 1.3 Interest

Traditionally this analysis would have been useful to a narrow group of financial services and investments professional and semi professionals who have access to significant capital and access to global markets to be able to reallocate assets in a rapid and effective manner. However, in the last 10 years the explosive growth of online platforms for trading meant that average investor now has access to sophisticated instruments with a high leverage and can also take advantage of this study.

## 2. Data

## 2.1 Data Selection

There is a significant choice when looking at the financial instruments that represent the risk assets and safe havens. The first step therefore was to narrow down and select the representative assets from both. For the initial exploration Dow Jones Industrial Average was selected to represent the risk assets. Rationale for this selection was that it is the best known global index and contains such bellwethers as Apple, Goldman Sachs, Microsoft and Walmart. For the safe havens *Gold, Japanese Yen and Swiss Franc* were selected as they are often quoted as being the location where the investors move their money during the times of economic shocks. During the later stage of the project a range of stock market indices from around the world was added to enhance the robustness of the analysis specifically these were:

- FTSE 100 – UK
- DAX – Germany
- CAC – France
- IBEX – Spain
- OMX – Sweden
- ASX – Australia
- ISEQ – Ireland
- Hang Seng – Hong Kong
- Nikkei 225 – Japan
- ATX – Austria
- AEX - Netherlands

## 2.2 Data Sources

Once the representative Risk assets and Safe Havens were defined the search on the internet revealed that the best source (unless signing up for a trial or paid subscription) was Yahoo historical quotes. In addition, for the geographic mapping / Folium maps the source presented in the labs was used to ascertain the polygons required for the correct mapping to occur.

## 2.3 Data Cleaning / Preparation

Once the data was downloaded  it was found to have extraneous columns volume and adjusted close which were removed. As the data analysis was occurring for the last 15 years the weekly granularity of the data was used.

The data was missing the % change from previous week which is the variable showing the assets return over the week. This had to be created using the following formula

*(Current Week Close – Previous Week Close)/Previous Week Close * 100*

The multiplication by 100 was used to convert the numbers into percentages so that it could be correctly processed in the data frames. An additional issue was found when downloading the data as for a number of assets there were null values in September 2019 and August 2008 that resulted in % change not being calculated. This data was filled manually by querying www.tradingview.com for the closing data during the respective weeks.

After loading the data into the data frames it was decided that columns Open, Close, High and Low can be dropped as they would not be used in the analysis as it was the percentage change that would carry the key information. Additional variables would then be introduced through adding more assets to the analysis to understand their impact on the data.

## 2.4 Data Overview

Following the data load across the individual assets each contained % change from previous weeks for 786 consecutive weeks starting from W/C 21/03/2005 – W/C 06/04/2020 providing a robust data set for sampling.

## 2.5 Currencies Baskets Preparation

One of the difficulties of analysing the price movement of Japanese yen (JPY) and Swiss Franc (CHF) is that it was not possible obtain the data representing the currency. Instead it was only possible to obtain individual currency crosses i.e. USDJPY which indicate the strength of US dollar against Japanese Yen. As the result for JPY and CHF the decision was taken to create a basket which would allow to gauge the strength of the currency. 5 currency crosses were selected for both JPY and CHF those are Australian Dollar, Canadian Dollar, EURO, Great Britain Pound, US Dollar
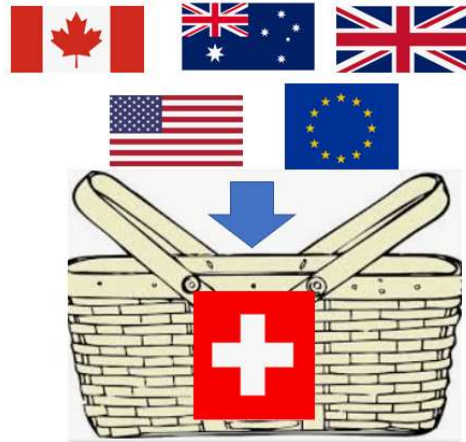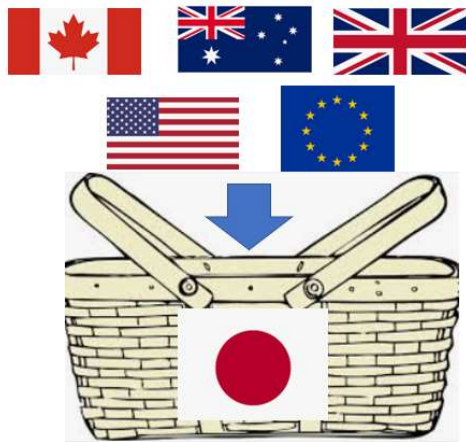
Each of the currency crosses was weighed the same 20%. So the formula for a specific week was:

(CHF  vs US Dollar + CHF vs Australian Dollar + CHF vs Canadian Dollar + CHF vs EURO + CHF vs Great Britain Pound)/5 = CHF Basket performance

Please note that for JPY currency crosses the change was multiplied by -1 this was done because of how the JPY is quoted i.e. USDJPY moving from 110.10 to 115.10 represents JPY going down as opposed if CHFUSD moved from 1.01 to 1.05 which would show the appreciation of the Swiss Franc.