

The Future of Gold from 2019 to 2039

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<p>This report is an extensive gold market analysis which examines the future of the gold market starting from 2019 and ending to 2039. For the purpose of this report, seven internationally recognised professionals including Gary Savage, Alexis Stenfors, James Rogers, David Brady, Brent Johnson, David Morgan and Jan Von Gerich were interviewed and over one hundred independent sources were examined.</p> <p>Aspects discussed in this report include gold's monetary history over the past 150 years, the world's current monetary system, the supply and demand factors of the gold market as well as the structure of the gold market itself, financial market manipulation and market efficiency, cycles analysis as well as the geopolitics around gold. The report examines all of these subjects individually after which these aspects are used to form a reliable and thorough market analysis.</p> <p>The report divides into two core segments which are the theoretical framework and the market analysis. The theoretical framework provides the foundation to which the market analysis is built on. The market analysis consists of three scenarios of which the first scenario examines purely the supply and demand fundamentals of the gold market, the second scenario presents a cycles analysis for gold and the third scenario examines the possibility of a global monetary system reform. All of the scenarios present both the possibilities and the risks for gold prices from the point of view in question. At the end of the market analysis segment of the report is a chapter which combines all of the scenarios and provides an all-inclusive picture of the future of gold for the next twenty years.</p> <p>The fundamentals around gold are positive for higher gold prices as supply is likely to contract and demand is likely to hold stable over the next twenty years. The cycles which drive the financial markets also suggest that gold prices are likely to head higher. In addition, to these factors, the monetary demand for gold has been increasing suggesting that gold could be remonetised over the next twenty years which poses both threats and immense opportunities to gold investors.</p> <p>Due to gold's history and geopolitical importance, gold is to be considered as money. There are major movements in the world to dilute the US dollar's reserve currency status which in the light of the evidence could result into the remonetisation of gold. In addition, the Efficient Market Hypothesis is immensely flawed to a point that the financial markets should be considered relatively inefficient in the short and intermediate timeframes. Financial markets are to be considered cyclical which means that they can be interpreted via sentiment and cycles. Gold prices are likely to head higher over the next twenty years and therefore gold offers great potential with relatively low risk to investors around the world.</p>	
Keywords Gold, Market Analysis, Economics, Monetary System & Geopolitics.	

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1 Introduction

I stumbled on gold in early 2016 and I have been studying the subject independently during the course my studies in Haaga-Helia University of Applied Sciences. The subject started to gain more of my interest as I researched further and discovered the importance of gold in the world's monetary system. When I realised that gold is not just a precious metal commodity, but also has a key role in the whole world's monetary system, I decided that I wanted to write my thesis on gold. The topic is also interesting because there is little academic research on gold after the dollar was de-pegged from gold in 1971 and Keynesian economics, which consider gold as a non-monetary asset, took hold.

Gold's importance is not publicised as it poses a real threat to the financial status quo which the central banks around the world hold. In the light of the evidence gold is to be considered as money and so gold is often referred to as the "anti-dollar" which refers to gold's long-term stable nature relative to the inflationary nature of the US dollar. In order to keep the world's monetary system afloat, it is important to ensure trust towards the system which can be achieved by making alternatives such as gold look bad in the academic sphere which in turn echoes to the public.

The subject is relevant since I see that the world's monetary system is already undergoing a major change which could be catastrophic for the US dollar's purchasing power and potentially very rewarding for gold investors. The timeframe examined in this analysis is 20 years but personally, I feel that major changes will take place much sooner. For the purposes of this research project, seven internationally known experts including David Brady, Brent Johnson, David Morgan, James Rogers, Gary Savage, Alexis Stenfors and Jan Von Gerich were interviewed to provide a deeper aspect to the report. It is noteworthy that all interviewees represent their own opinions in the citations.

This report is a form of gold market analysis of which objective is to provide a reliable gold market analysis for the next 20 years. The report examines gold from three perspectives which are the monetary aspect of gold, cycles analysis as well as supply and demand fundamentals. The report also addressed criticism towards the Efficient Market Hypothesis by examining market participants and gold market manipulation. In addition, the report also explains the rationale behind conducting cycles analysis and provides explanatory understanding on how financial markets operate. The report also discusses the rationale behind the gold accumulation and repatriation trends amongst central banks which are gaining more and more attention in traditional financial media.

2 Acknowledgements

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I want to express special gratitude towards Gary Savage for his efforts in educating cycles to people all around the world. Gary was the first person who I interviewed for the thesis and by doing so he gave me lots of motivation to ask for further interviews and to seek excellence in the report. Gary has been one of the most important persons to have affected not only the topic selection of my thesis but also the way how I view the world. In late 2016, Gary opened my eyes to cycles which surround us in our daily lives. For that I cannot thank him enough.

The making of this thesis was all but easy, but the people around me pulled me through. Thank you for believing in me.

3 Theoretical Framework

This chapter aims to level the baseline between the reader and the writer and will disclose the basis for the actual market analysis presented in chapter four. The theoretical framework provides some historical perspective for the reader, discusses supply and demand factors of the physical gold market, examines the structure of the gold market with its prevailing problems as well as discusses the theory behind cycles and sentiment based market analysis. The chapter also examines the efficient market hypothesis and its problems, discusses previous gold market manipulation cases and presents evidence of potentially ongoing manipulation in the gold futures market.

Due to gold's unique properties, humankind's long relationship with gold, multidimensional demand aspects and certain secrecy surrounding the gold market it is important for the reader to be open minded and to be willing to practice critical thinking. This chapter aims not only to outline the foundation for the market analysis but to also answer the question what gold is. The first step in answering the question is to examine the oldest and one of the least understood aspects of gold – the monetary aspect of gold.

3.1 The Monetary Aspect of Gold

Gold's monetary aspect is a complex concept which is not commonly discussed. The general opinion amongst academic and investment communities is that gold is rather a commodity than a monetary asset. Yet, there is substantial evidence which suggests that gold has a significant monetary aspect. As an example central banks all around the world hold gold as a part of their foreign exchange reserves making gold the only commodity widely recognized as a reserve asset. In addition, gold has a multimillennial history of serving as a medium of exchange – a history not shared by any other commodity, object or asset.

As a matter of fact central banks accounted for close to 15 per cent of the total physical gold demand in 2018 according to an annual report published by the World Gold Council (WGC 2019a). Since the per cent is rather significant but much of the academic sphere denies the monetary aspect a clear dilemma is presented. As is discussed in the following chapters, gold's central bank demand is heavily focused to the eastern part of the world which further adds to the division of opinions on the subject.

Because of this gold market analyses are often focused on gold's intramarket fundamentals such as mining output and demand figures but tend to lack broader perspective and in depth analysis of why market participants are acting as they currently are. The approach is often suitable for other commodities where industrial demand and production output

largely guide the spot prices. However, as the following subchapters are about to enlighten gold's monetary aspect plays a major role in the gold market and for this reason the monetary aspect of gold has a substantial weighing in this report.

The following subchapters examine the monetary history of gold as well as gold's relationship with different countries and central banks around the world. In the market analysis segment of the report scenario three examines gold's future from a monetary perspective.

3.1.1 The Brief History of Gold as Money

According to historians, evidence of gold being used as money date as far back as to 8th century BC in Asia where irregular shapes of gold electrum were stamped and used as a medium of exchange. The earliest evidence of pure and refined gold with stamped images being used in coins dates to approximately 550 BC and the era of king Croesus of Lydia. Some evidence suggests that gold has been used as a medium of exchange all the way back in 2 000 BC by the ancient Egyptians. Depending on the definition gold has been used as money for at least 3 000 years with evidence suggesting that gold has been used for and traded as jewellery all the way back in 5 000 BC by the Egyptians who viewed gold as a symbol of immortality and power due to its corrosion resistance and shiny appearance. (Ancient History Encyclopedia 2014.)

Historians and people in the gold industry today refer to currencies backed by physical gold as sound money – a system which was globally authorized as late as in the early 1970s. Sound money was present at the birth of the United States of America and a direct quote of the US constitution Article 1 section 10 clause 1 states that:

No State shall enter into any Treaty, Alliance, or Confederation; grant Letters of Marque and Reprisal; coin Money; emit Bills of Credit; make any Thing but gold and silver Coin a Tender in Payment of Debts; pass any Bill of Attainder, ex post facto Law, or Law impairing the Obligation of Contracts, or grant any Title of Nobility. (National Archives 2018)

Although sound money is a newer term the US constitution prohibits states from using anything but gold and silver as legal tendering in payment of debts. Simply put the US constitution mandates that only gold and silver shall be used as money in the United States although that has not been the case since 1971. As global monetary history of gold is too long to discuss in a single research paper this chapter will focus on the past 150 years of gold monetary history in the western world.

The Classical Gold Standard

In the early 1870s Germany was going through a unification process to unify the states of the German confederation into an empire ruled by a single monarch and on the 18th of January 1871 the German Reich was officially born. It was important for the Germans to build trust into the new nation state and as a part of the unification process the German gold mark was created in 1873. This moment can be seen as the beginning of the globally used classical gold standard. (WGC 2018g.)

Although there were currencies based on a gold standard in Europe prior to the German gold mark, Germany's move to adopting a gold standard spurred actions around the world and by 1900 almost all countries on earth with exception of few were effectively on a gold standard. During the classical gold standard each unit of fiat-currency such as bank notes was backed by an equalling amount of gold. This meant that there was essentially no fractional reserve banking during the classical gold standard as central banks were required to issue only as many units of currency as they had gold to back that unit of currency. (WGC 2018g.)

The gold standard was based on the principle that countries set a fixed exchange rate between gold and their local currencies. In addition, there was no restrictions on imports and exports of gold which enabled international trades to be settled in gold. As countries money supplies were tied to amount of gold the country possessed the flows resulting from international trade set the size of the money supply for each country. The expansion of the money supply caused inflation in the countries running trade surpluses and caused deflation in the countries which were running deficits. (WGC 2018g.)

The classical gold standard is often cited as a self-correcting system since deflation in countries which are running trade deficits cause prices in that country to fall which in turn makes the country internationally more competitive. The improved competitiveness causes foreign investors to invest into the country causing expansion of the money supply and the situation turns around. (WGC 2018g.)

The United States adopted the gold standard in 1875 under the Specie Payment Resumption Act (SaL: 43rd). This gold standard was later refined in the Gold Standard Act of 1900 which set that one dollar was equivalent to 25,8 grains of 90 per cent pure gold (SaL: 56th). This is equivalent of about 1,5 grams of 100 per cent pure gold. The gold was redeemable with dollars in the form of for example the Saint-Gaudens Double Eagles \$20

gold coins which were the ancestor of the modern US gold eagle bullion gold coins (US Mint 2018).

Under the classical gold standards central banks had two main functions which were maintaining the convertibility of notes in circulation to gold at a fixed price as well as accelerating the adjustment process in case there were imbalances in the balance of payments (WGC 2018g). As interest rates were set by the supply and demand of that countries local currency the central banks had no say in the interest rates which they directly control nowadays. The beginning of the 20th with the outbreak of the First World War shaped the classical gold standard. While different countries adopted new customs and policies throughout the first decades of the new century, the outbreak of the First World War in 1914 is often considered as the end of the classical gold standard.

Gold Exchange Standard

At the beginning of the 20th century a global shadow of war emerged due to the rise of ideologies and nationalism. War is expensive to conduct and as the world was on a gold standard that meant that nations pursuing war needed lots of gold to finance war. Between 1900 and 1913 the national gold reserves in France, Germany and Russia doubled whilst in the US the national gold reserves quadrupled. The outbreak of the First World War resulted in increased currency circulation and withdrawals of gold coins from circulation amongst nations conducting war. US reduced gold coin minting by 83 per cent from 1914 to 1919 and Britain withdrew over 80 per cent of its gold coins from circulation during the First World War. (WGC 1999b.)

As a matter of fact the US suspended the gold standard momentarily in July of 1914 as gold flows out of the country occurred on a large scale on the outbreak of the First World War which resulted in disorderly financial conditions in Europe. Foreign investors began to liquidate their assets in the US and demanded payments in UK's pound sterling. The immense demand for the sterling pushed the dollar sterling cross rate almost 40 per cent above the parity rate which made arbitraging the dollar sterling cross rate extremely profitable by bringing gold from the US to the UK. Few months after the suspension of the convertibility of the dollar to gold the situation stabilized, and gold began to flow into the US due to military equipment orders made by countries at war. (Federal Reserve 1989.) Many countries in addition, to the US also suspended the convertibility of their local currencies to gold and prohibited gold exports from the country restricting the use of gold on individuals level even further. Whilst the gold standard remained officially largely in use during and after the First World War governments took a tighter grip on their gold reserves in the beginning of the 20th century. (WGC 1999b.)

Prior to the First World War the US institutionalised the nations gold holdings by creating a central bank which was named the Federal Reserve (Fed) by the Federal Reserve Act of 1913. The Federal Reserve Act allowed the newly born central bank to centralize the nations gold holding and to conduct fractional reserve lending which allowed the government to run deficit spending by issuing more currency notes for each ounce of gold held by the central bank. The Federal Reserve Act stated that the Fed is allowed to issue Federal Reserve notes (US dollars) with a minimum of 40 per cent gold backing. This meant that for each dollars' worth of gold held by the Fed there could be 2,5 dollars in circulation as Federal Reserve notes. (Iden 1914.) The Federal Reserve Act allowed the US government to leverage its spending.

Although the First World War began in Europe in August 1914, the US did not join the war before April 1917. This put the US into a highly privileged position as the US acted as a supplier for countries in Europe conducting war. Countries conducting war in Europe paid for their supplies bought from the US in gold which allowed the US to accumulate lots of gold. Between August of 1914 and April of 1917, the United States imported a total of 1,12 billion dollars' worth of gold and so the monetary gold stock of the United States grew from 1,57 billion to 2,85 billion dollars (Federal Reserve 1989). This gold accumulation from Europe allowed the economic centre of the world to shift from Britain to the US – progress which continued in the decades to come.

After the First World War countries were reluctant to go back on a gold standard where gold would circulate freely amongst the public and between nations even though the US resumed to the convertibility of the dollar to gold in 1919. At this point the economic power had shifted away from the pound sterling and towards the partially gold-backed US dollar. Nations discussed on whether the western world as a whole should resume to the pre-war gold standard but instead it was agreed that the convertibility of few currencies like the US dollar and the pound sterling was enough. Smaller countries with depleted gold reserves could use those currencies as reserve currencies instead of actual physical gold reserves. This 'gold exchange standard' as it was named allowed the US to accumulate its gold reserves even further so that by 1925 the US had 45 per cent of the world's monetary gold reserves. For comparison the second largest gold reserves were in France which owned less than nine per cent of the worlds gold stock. Private gold coin circulation ended in the interwar period and by 1929 central banks held a staggering 92 per cent of all monetary gold in circulation. As Timothy Green from the World Gold Council put it "from being a metal that was in the hands of millions for two or three generations, it [gold] was becoming concentrated in the vaults of a select few central banks". (WGC 1999b.)

Finally after an attempt by the UK in 1925 to return on a modified gold standard the UK abandoned the gold standard in September of 1931 for good. The action was followed quickly by other countries including Sweden, Portugal and India. Countries like Belgium and the Netherlands suffered heavy losses as they were holding large quantities of pound sterling in belief that it was as good as gold (WGC 1999b.) On 19th of April in 1933 the US effectively abandoned gold standard and temporarily prohibited all gold exports from the country. Gold was also confiscated from the public and individual gold ownership was made illegal. Gold coins were made illegal, withdrawn from circulation and melted into bars only to be used by certain industries and to be held by the government or in specific the Federal Reserve. (Federal Reserve History 2013.) The aim of the confiscation was to collect gold from the public in order to conduct arguably one of modern history's largest overnight destructions of private wealth which was later conducted in January of 1934. On 31st of January 1934 the US devalued the US dollar by over 40 per cent by raising the price of gold from the original 20,67 dollars to 35 dollars per ounce (Federal Reserve History 2013). This move was made to create inflation which was supposed to stimulate the economy still suffering from the deflationary great depression.

Opposed to the UK's and the US' decision to abandon the gold standard Belgium, France, Italy, the Netherlands, Poland and Switzerland formed the so called 'gold bloc' which aimed to keep fixed exchange rates between the countries involved which wished to remain on the gold standard. The gold bloc was established in July of 1933 via an agreement signed in Paris (SNB 2018a). However, the gold bloc proved to be powerless in maintaining stable exchange rates against gold flows into the US under the newly set 35 dollar price of gold. Between 1935 and 1936 the gold bloc gradually fell apart as Italy, Luxembourg, France, the Netherlands, Poland and Switzerland all abandoned the gold standard. As a remark Switzerland abandoned the convertibility of the Swiss franc to gold remaining on a gold reserve requirement. This is further discussed later in the report.

By the beginning of the Second World War nearly all countries had abandoned the gold standard. Gold had flowed almost solely from Europe into the US of which gold reserves grew from less than 6 000 tonnes in 1920 to almost 20 000 tonnes in 1940 after which there was a slight pullback as the US joined the war in late 1941 (WGC 1999b). From the perspective of the US the situation was very similar at the beginning of the Second World War as it was at the beginning of the First World War. The war in Europe began on the first of September 1939 when Germany invaded Poland, but the US joined the war before Pearl Harbour which took place on the 7th of December 1941. As at the beginning of the

First World War the US was again an important supplier of war machinery at the beginning of the Second World War.

At the beginning of the first and the Second World War the United States was in a highly privileged situation acting as a major supplier of war machinery for countries fighting in Europe. The European countries paid for these purchases mostly with their already depleted gold reserves as well as with debt issued by the US. The world wars enabled the US to acquire two thirds of the world's monetary gold, which played a key role in the prosperous 50s and 60s in the US and laid the corner stone in establishing the reserve currency status of the US dollar.

The Bretton Woods

After the Second World War most of the developed world was completely decimated and there was an utter need to raise confidence in local currencies. The world wars and the deficit spending between the wars had caused hyperinflation around the world of which the Weimar Germany's hyperinflation is arguably the best known. To avoid civil unrest often linked to hyperinflationary periods and to ensure economic stability for countries recovering from the war it was particularly important for countries to have stable local currencies. By then the world was used to having currencies backed by gold or silver which would ensure the confidence towards the system but the deficit spending during the world wars had led to many countries depleting their national gold reserves to the United States in seek for war machinery. By 1950 the US had become the largest gold holder in the history of the world with national reserves totalling 20 279 tonnes which accounted for over 68 per cent of the world's total national gold reserves (WGC 1999b).

Since the world's gold reserves were heavily centralized to the US the world needed a different system which did not require nations to hold significant gold reserves to conduct international trade. In July of 1944 in Bretton Woods New Hampshire United States, representatives from 44 countries across the world gathered together to create a new global monetary system which became to be known as the Bretton Woods system (US Department of State 2009). Essentially the Bretton Woods system was formed so that nearly all of the worlds currencies got backed by the US dollar which in turn was backed by gold at 35 US dollars per ounce. With the dollar backed by gold and the local currencies backed by the dollar with fixed exchange rate this made the local currencies as good as gold in the eyes of the consumers which provided trust towards the small local currencies. The Bretton Woods agreement led to the US dollar becoming the world's reserve currency (HBS 2005).

At first the Bretton Woods system served its purpose well by creating trust in local and later international trade in a world mauled by war. This was achieved mainly by allowing the US dollar to act as the major convertible currency in Europe with local currencies being adopted slowly alongside the dollar (HBS 2005). Much of the developed world needed to be built up from the scratch which created lots of demand in construction workers and machinery as well as related industries such as transportation. This resulted in low unemployment as well as relatively stable economic growth in Europe and the US. The world's economy saw a great expansion after the Second World War which lasted all the way until the early 1970s with the developed world witnessing a real annual GDP growth of close to five per cent between 1950 and 1973 (HBS 2005). This era became famously known all around the world as the post war boom also known as the golden age of capitalism.

The post war boom resulted in rapidly growing living standards across the world, but the biggest winner of the era was yet again the United States. The US did not carry the burden of rebuilding cities and societies like the countries in Europe did. This meant that just like at the beginning of the first and the Second World War the US acted as the supplier of the world with exports focusing on civilian goods this time around. This allowed US manufacturing companies to gain global exposure and to grow rapidly into the multinational corporations they are today.

As living standards skyrocketed from the rationing periods during the world wars the US started accumulating trade deficits with its trade partners in Europe and Asia. This led to a rapid decline in the US gold reserves as European countries started claiming for gold against their US dollars which they had accumulated from trade with the US. US dollars were redeemable to gold on demand and many countries exercised this right. As a result, the US gold reserves declined from 20 271 tonnes in 1950 to just 9 070 tonnes in 1971 (WGC 1999b). In addition, to the decline in the US gold reserves the world's total monetary gold reserves had risen to 32 045 by 1971 which meant that the US was holding less than 29 per cent of the global monetary gold reserve compared to 68 per cent in 1950 (WGC 1999b).

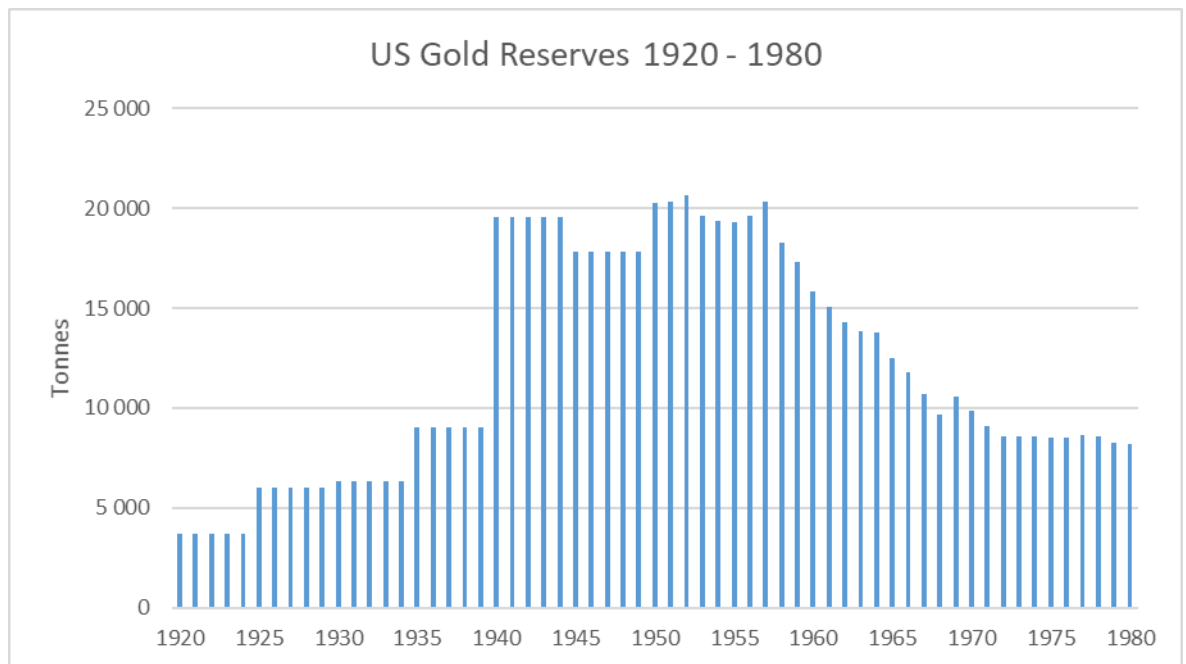


Chart 1. United States official gold reserves 1920 - 1980 (WGC 1999b)

As can be seen from Chart 1 above, the US had accumulated large gold reserves after the Second World War all the way throughout the 1950s. Even though Europe had to spend the immediate post-war decade undergoing extensive reconstruction, Europe managed to close the technological and productivity gap with the US by the late 1950s (HBS 2005). This allowed European countries to start pursuing independent monetary policies and as can be seen from the chart after 1958 the US gold reserves started depleting rapidly. Germany, Italy, Netherlands, France and other large countries in Europe started repatriating large quantities of gold from the US which continued throughout the 1960s.

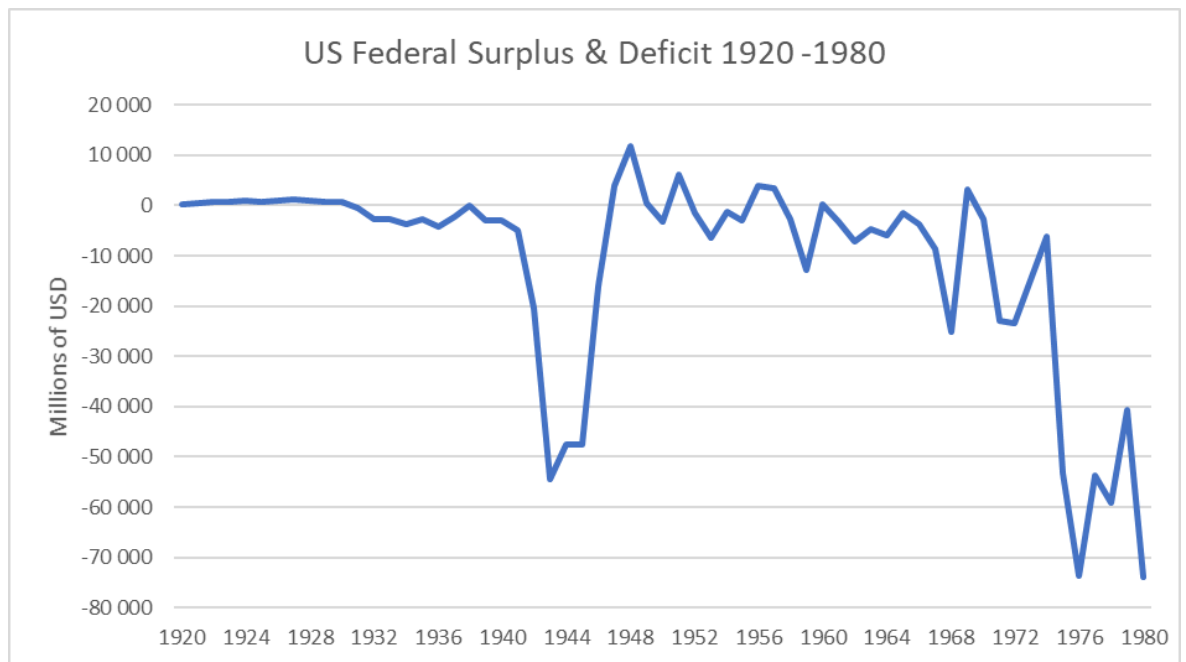


Chart 2. United States federal surplus or deficit (Federal Reserve 2018b)

Chart 2 presents the US federal deficits between 1920 and 1980. As can be seen from the chart, US accumulated significant deficits during the Second World War but the deficit spending was not an issue since the US managed to accumulate large gold reserves during the war. The problems started when the US started accumulating so called welfare deficits in the 1950s and the 1960s which were also amplified by the Korean war which took place in the early 1950s.

The rapid decline in the US gold reserves coupled with growing US government deficits in the 60s led to a highly inflationary period in the US. As nations repatriated gold from the US, they paid the US with US dollars which meant that the amount of dollars in circulation inside the US increased rapidly. By the principles of the velocity of money, more currency in circulation leads to an increase in inflation if the velocity of money is held constant. In other words, as European countries brought US dollars back to the US consumer prices in the US rose rapidly. These developments in the US spurred doubts in Europe concerning the US' ability to convert dollars into gold on demand.

Rising prices in the US generated stress for gold prices to increase and throughout 1960s many solutions were tried to tackle the problem. For example, in 1961 the London Gold Pool was formed in which eight large nations pooled their gold reserves to defend the US dollar's gold peg in order to prevent the price of gold from rising above the 35 dollar per ounce price (WGC 2018n). The London Gold Pool eased the situation for a few years but started to crumble when inflationary pressures in the US grew in late 1960s (WGC

2018n). In 1965 the president of France Charles De Gaulle held a famous speech addressing the relationship between the US dollar and gold in which he criticized the creation of debt in the US which was enabled by the reserve currency status of the dollar (De Gaulle 1965). The speech was merely a publication of the thoughts which had roamed Europe for years.

In the midst of efforts to come up with an alternative to the US dollar dependent system the International Monetary Fund's (IMF) Special Drawing Right (SDR) was created in 1969 (WGC 2018n). The SDR is in use today and currently the SDR is a basket of currencies with predetermined weights. The US dollar has a 41,73 per cent weight in the SDR making it the largest component of the SDR. The euro is the second largest component with a 30,93 per cent weight, the Chinese Yuan is third at 10,92 per cent, the Japanese yen is fourth at 8,33 per cent and the British pound is the fifth at 8,09 per cent (IMF 2018b). What many do not know is that originally the SDR was a gold-backed currency which value was set to 0,888571 grams of fine gold per SDR – the same value set to the US dollar under the Bretton Woods agreement in 1944 (IMF 2018b).

As inflation in the US started to accelerate towards the end of 1960s the Bretton Woods system came under immense stress. In order to prevent out of control inflation the US needed to change the international monetary system. As a result, the Bretton Woods era ended on the 15th of August 1971 when the US president Richard Nixon gave an executive order to suspend the convertibility of the US dollar into gold (Nixon 1971). This event was a part of series of economic measures in early 70s which became to be known as the Nixon Shock (US Department of State 2018). The end of the Bretton Woods era marked the beginning of the Global Dollar Standard on which the world is still to this date.

The Global Dollar Standard and The Era of Gold as a Reserve Asset

After the Bretton Woods system had been suspended by President Nixon's executive order in 1971 all the world's currencies backed by the dollar became fiat currencies and gold became a free floating commodity. A fiat currency is a currency with little or no intrinsic value and so in other words it is not backed by any physical assets such as precious metals (FT Lexicon 2018). As with all other monetary systems fiat currencies ultimately rest on the public's trust towards the system. Since the dollar was no longer backed by gold neither were the currencies previously backed by the dollar.

The global dollar standard is still in use although it is rarely addressed with this name in the academic sphere. Currently the US dollar is the official currency in the United States and all its offshore territories as well as in Ecuador, El Salvador, Zimbabwe, Timor-Leste,

Micronesia, Palau, and the Marshall Islands and in total over 20 countries in the world use the US dollar as either the main or secondary currency (Business Insider 2018c). Almost every country in the world with only the exception of few accept US dollars as medium of exchange on government level via the Swift system. The US dollar is also globally recognized amongst the public and as a rule of thumb if one has US dollars one can get along in almost every country in the world. Those dollars can be easily exchanged to the local currency in a local bank or the dollars will be accepted as they are. It is not uncommon to see the US dollars used in South-East Asia or Africa to pay for everyday services and more often than not the US dollar is used as the benchmark – base currency – for local currencies in the currency markets.

The dollar is often referred to as a reserve asset as is the euro, the Chinese yuan, Japanese yen as well as the British pound. The dollar standard concept is easiest explained by the wide use of the dollar in global transactions. The Society for Worldwide Interbank Financial Telecommunication, more commonly referred to as the Swift, is a globally used platform which enables financial institutions to operate and communicate with each other (Swift 2018). According to a study conducted by the Swift between 2012 and 2014 the US dollar accounts for 51,9 per cent of all international trade and 79,5 per cent of inter-regional transactions (Swift 2015).

The dollar is currently seen as a strong currency which offers protection in international economic distress. As was explained in the previous subchapters the dollar gained its strong currency status by conducting relatively sound monetary policies and by acting as a supplier for Europe during and after the world wars. The Bretton Woods system allowed the US to gain an even bigger influence over the global monetary system, which reflects to the dollar's unique situation it currently enjoys. The US dollar is currently the world's most held foreign exchange reserve asset accounting for 62,25 per cent of global allocated reserves – official reserves reported to the IMF – according to IMF's quarterly COFER report (IMF 2018a). After the US dollar, the euro is the second most held reserve asset accounting for 20,26 per cent of allocated reserves (IMF 2018a).

With close to 80 per cent of inter-regional transactions conducted in US dollars, dollar's wide global acceptance and with the dollar accounting for a clear majority of global foreign exchange reserves the numbers are favouring the statement that the world is on a so called 'global dollar standard' where nearly all countries rely on the functioning dollar. This unique status of the dollar allows the US to issue sanctions on countries, specific companies and organizations and even to individual people. The US is also able to cut out entire

nations off the international dollar payment system as happened with Iran in late 2018 (Financial Times 2018). Some analysts and reporters have gone to the extent of saying that the US is deliberately weaponizing the dollar (Bloomberg 2018c).

In the interview with James Rogers – a globally known investor and the co-founder of the Quantum Fund – he pointed out that “There are several countries in the world that have been very clear that they’re trying to come up with a monetary system where the US dollar does not have a monopoly -- US uses that [monopoly] against others when they feel like it and many people feel that’s not fair so they’re trying to come up with an alternative way to settle debts and they will succeed in that”. (Rogers 27.11.2018.)

In addition, to worldwide efforts aiming to directly bypass the US dollar’s monopolistic status Rogers also noted that “Several countries are also trying to come up with alternatives to institutions like the IMF and the World Bank which have monopolies based on 50 to 70 years of history. Much of the world doesn’t like that anymore so there are movements, that will be successful, which compete with the IMF, the World Bank and the US dollar”. (Rogers 27.11.2018.)

It is clear that many countries and entities including Russia, China and the European Union are upset with the US’ ability to issue sanctions and block banks from the Swift system. This has spurred a rising trend of cross-country payment agreements which aim to bypass the US dollar and the Swift system by transacting with local currencies rather than the US dollar. China has been one of the leaders of the movement with the internationalization of the renminbi (RMB) which has so far included adding RMB to the IMF’s SDR basket, offshore RMB clearing houses, bilateral swap agreements and inter-bank RMB transaction platforms (SCMP 2016b).

Russia has also been active in creating agreements to bypass the US dollar in international transactions. For an example in December 2018 a Russian media network RT reported that Russia and Argentina are also contemplating on a mutual trade agreement which would be settled in both peso and rubbles instead of the US dollar (RT 2018b). In addition, to many similar bilateral trade agreements Russia has also drastically cut its US treasury bond exposure. Since December 2017 Russia has sold over 80 per cent of its US treasury bonds (CNN 2018).

The dollar-negative statements and actions do not limit to governments. The CEO of Moscow Exchange Alexander Afanasiev said in January 2019 when addressing the Lower

House of Russia's Parliament that "We know that there are a number of super conservative investors who bought the U.S. dollar and kept the money under the pillow, thinking that it is the safest option out there" (Kitco 2019b). The statement was made during a parliament hearing on whether Russia should get rid of value added tax on investment grade gold bars and is good example of how opinions on the US dollar are souring on the private sector as well.

The US sanctions against Iran which were implemented during the last quarter of 2018 quickly sparked a series of efforts from multiple countries to maintain trade with Iran. CNBC reported in late September that China, Russia and the EU have joined forces to assist and support legal and legitimate trade with Iran by designing ways to overcome the sanctions enforced by the US (CNBC 2018d). These efforts include for example specially designed clearing houses which are designed to provide a window for European companies to conduct trade with Iran completely separated from the US dollar enforced Swift (The Guardian 2018a).

In addition, to frustration towards the US sanctions Bloomberg reported in December of 2018 about EU's plans to expand euro's role in international trade and with a prominently titled article "Here's How Europe Plans to Challenge the Dollar's Dominance". The article discussed EU's plans to increase the euro's use in energy trade for example by creating a euro denominated crude oil benchmark which could be used in oil trade between EU member states and third party oil producers. The article also claimed that the European Union's Commission was worried about disruptions in energy supply which could result from actions conducted by so called "third countries" which undeniably referred to the United States and its sanctions. (Bloomberg 2018b.)

Due to gold's long history of serving as money gold is still seen as a safe haven asset but rarely recognized as a form of legal tender in the current global dollar system. However, few exceptions have risen in the United States where individual states have been passing legislation to make gold and silver legal tender. For example, the state of Utah issued the Utah Legal Tender Act in March 2011 which stated that the state of Utah "recognizes gold and silver coins issued by the federal government to be legal tender" (Utah Currency Amendments 2011). Also in the European Union gold in investment form has a special status of being VAT free all across the union. For the most part however, gold does not have an official role in the current fiat based global monetary system.

The Swiss Franc and Gold

The Swiss franc is currently and has been considered as a safe haven asset for over a century due to which the franc has also enjoyed rigid demand and a strong currency status much like the US dollar. The history behind the franc's safe haven status leads to year 1850 when the Swiss Confederation introduced the fully gold-backed Swiss franc. At first the Swiss franc was a gold-backed currency amongst others in Europe like the French franc but the demand for the Swiss franc grew as Europe was shaken by a series of revolutions and wars which put the integrity of other currencies in jeopardy. Some major European conflicts of the era include the 3rd French revolution between 1848 and 1849, the unification wars of Italy between 1848 and 1870 and the unification wars of Germany between 1862 and 1871 which lead to the birth of the German gold mark in 1873.

Switzerland on the other hand has not participated in international conflicts since the War of the Seventh Coalition which took place in 1815. After the War of Seventh Coalition Switzerland went through a short civil war in November 1847 which lasted less than a month. Since then Switzerland has not been involved in armed conflicts which is the basis to the concept of Swiss neutrality. The fact that Switzerland is considered a neutral country has historically increased the demand for the Swiss franc during times of uncertainty and turmoil as the Swiss franc is seen to have a stable and conflict free country backing it. Another factor contributing to the safe haven status of the Swiss Franc is the strength of the Swiss economy which is also strongly linked to the Swiss neutrality. The Swiss neutrality has allowed Switzerland to pursue stable economic growth and low inflation for over 170 years whilst other surrounding countries have experienced several waves of distress.

When asked to explain the Swiss franc's safe haven status Jan Von Gerich pointed out that from his point of view the reasons behind the Swiss francs safe haven status are based on the Swiss' historically stable economic and political environment, low inflation and the Swiss central banks pursue for low inflation. Von Gerich also noted that the safe haven status of the franc has shown to pose problems for the Swiss economy which is unable to fully handle large monetary inflows as was seen during the European sovereign debt crisis. (Von Gerich 11.12.2018.)

It often comes as a surprise to many, but Switzerland was effectively on a gold standard until December of 1999 when the new constitution of Switzerland took effect. The vote for the new constitution was far from unanimous as the vote was passed by a narrow margin with 59,2 per cent for the reform and 40,8 per cent against (United Nations 2009). Article

99 of the new constitution redefined the monetary policy of Switzerland and further underpinned the Swiss National Bank's (SNB) independence in decision making (Swiss Federal Council 2018). The article also officially decoupled the link between gold and the Swiss franc making the franc a fiat currency.

The Swiss franc has a history of pegs. In the late 1700s and early 1800s the franc was backed by and pegged to silver after which the Swiss adopted a gold standard in 1850 which held with some modifications until the beginning of the 21st century. Unlike most western countries Switzerland did not participate in the Bretton Woods agreement and so the Swiss franc was on its own gold standard during the Bretton Woods system. In 1973 Switzerland was unable to defend the franc's gold peg and as a result Switzerland adopted floating exchange rates but already in 1978, the Swiss decided to cap the franc against the German mark limiting francs ability to rise against the German mark. In 2011 the Swiss National Bank announced another cap for the Swiss Franc when the central bank set a minimum exchange rate against the euro. However, this peg was broken in January of 2015 when the SNB lifted the minimum exchange rate against the euro after which the euro plunged 30 per cent in one day against the Swiss Franc causing a stock market collapse in Switzerland. (SNB 2016; SNB 2018a; The Economist 2015.)

In addition, to the strong history of pegging the Swiss franc has been devalued only once which took place in 1936 during the Great Depression when the Swiss franc got devalued by 30 per cent together with the French Franc. After the devaluation the franc was first revalued during the Bretton Woods system in 1949 by 16 per cent against the dollar and in 1971 by little over seven per cent – in a time period when other currencies were mostly devalued and not revalued. (SNB 2018a)

After the new constitution took effect in January of 2000 the Swiss franc continued to appreciate against the US dollar for a few months although the currency had witnessed a major fundamental change – changing from gold backing to a fiat currency. In the year 2000 the Swiss franc appreciated from 1,59 dollars to 1,82 between January and October after which the value of the franc stalled and began to fall dramatically. Between October of 2000 and August of 2011 – after which the franc was pegged to the euro – the franc fell more than 60 per cent from 1,82 dollars to just 0,71 dollar. (Investing 2018f.)

As part of the peculiar historical relationship between Switzerland and gold in November 2014 Switzerland held a referendum named 'Rettet unser Schweizer Gold (Gold Initiative)' or Save our Swiss Gold which demanded that the SNB should increase gold's share of

the central bank's total assets to at least 20 per cent and that the national gold of Switzerland was to be stored completely on Swiss soil and that gold sales conducted by the SNB were to be made illegal (SNB 2018b). The referendum was rejected as almost 80 per cent of the Swiss voted against the proposal although voting activity was relatively low (The Telegraph 2018).

One of the reasons for the rejection of the referendum was the political pressure against the initiative. The president of the Swiss National Bank Thomas Jordan had been vocal against the gold initiative prior to the vote stating that "The initiative is both unnecessary and dangerous" and that a gold backing would limit the country's control over its monetary policy (Forbes 2014). Although true in the essence that a partial gold backing would limit the country's ability to expand their monetary supply at will when examining the history of the Swiss franc gold backing was actually in a key status in building the franc's strong currency status and the formerly solid Swiss economy which has now regressed to the same situation as other weak economies in the world – zero interest rate environment which is not enough to stimulate major economic growth and quantitative easing which is used to purchase assets around the world to the SNB's balance sheet.

Over the past ten years the SNB has lowered interest rates from 0,5 per cent to negative 0,75 per cent and increased its balance sheet by more than 1 000 per cent from less than 80 billion CHF to almost 800 billion CHF (SNB 2019; Trading Economics 2019c). Even after lowering interest rates below zero and injecting the markets with a gigantic stimulus packages the Swiss economy has been able to grow at an annualised average of only 1,3 per cent over the past ten years (World Bank 2017a) – rate which was previously overperformed without QE and ZIRP. The Swiss economy is far from its days of glory and it is somewhat of a miracle that the Swiss franc is still considered the same safe haven asset as it was during its 150 years on a gold standard.

In the interview, James Rogers pointed out that the views on the Swiss franc are subject to change over the upcoming decades partially because the foundations around the Swiss franc have moved away from sound monetary policies. When asked about the Swiss franc Rogers said:

"It's embarrassing -- when I was a kid the Swiss franc was the soul of integrity, backed by gold, a central bank and a population that believed in keeping your currency sound. That population doesn't exist anymore -- When people realize in the next decade or two what the Swiss franc has become people are going to change their views on the Swiss franc". (Rogers 27.11.2018.)

Although a complex concept, the reasons for the safe haven status of the Swiss franc can be summarised into three factors which are namely the Swiss neutrality as a part of their foreign policy, Switzerland's stable economic environment and the country's historical relationship with another safe haven asset – gold. The reason why the Swiss franc was selected to this report was to provide the reader further understanding on gold's status as a stable and valuable asset. The Swiss franc is still to date considered as a safe haven asset but the foundation around the franc have crumbled due to the decoupling of the franc and gold and the uncertainties a fiat currency brings with itself.

Modern Gold Dinar

The modern gold dinar is a concept in the Islamic community of a currency made of gold. The concept is based on the Islamic law which according to an Islamic philosophy resource website states that the Islamic dinar is a coin weighing 72 average sized grains of wheat (Muslim Philosophy 2016). Although the gold dinar is not officially issued by any country for the time being the 21st century has a few cases where the gold dinar has been discussed with devastating consequences. The most well-known case of a gold-backed currency being openly discussed in the Muslim community occurred less than ten years ago when the Libyan dictator Muammar Gaddafi was still in power and had been publicly vocal about the creation of a gold-backed currency which would be used to conduct international trade and to price oil in gold (RT 2011).

According to later published confidential email conversation which took place in April of 2011 between the former Secretary of State of the United States Hillary Clinton and her unofficial intelligence gatherer Sidney Blumenthal, Blumenthal outlined five key reasons which led to the French president Nicolas Sarkozy's decision to apply military action against Muammar Gaddafi and Libya. The five reasons outlined in the email were: desire to gain a greater share of Libya's oil production, increase French influence in North Africa, improve Sarkozy's internal political situation in France, provide the French military with an opportunity to reassert its position in the world and to address the concern of his advisors over Qaddafi's long-term plans to supplant France as the dominant power in Francophone Africa. (Foreign Policy Journal 2016a.)

The fact that France was willing to attack Libya based on self-interests concerning political control of Africa has a highly negative ring of colonialism. More interestingly the email showed that a gold-backed currency was considered as an actual geopolitical threat on the highest level of homeland security in the United States and Europe. In the email Blumenthal suspected that even though Gaddafi's bank accounts were frozen he could equip

his armed forces with Libya's gold reserves standing at 143 tonnes at that time and Blumenthal also noted that Gaddafi had plans to issue the gold dinar to overrule the widely used West African CFA franc (Foreign Policy Journal 2016a) – a currency pegged to the euro.

Foreign Policy Journal wrote a report on the email in January of 2016 and raised an interesting point that the internal email aimed to summarize the motives behind NATO's intervention in Libya led by France, but the email did not have a single mention of saving civilian lives even though that was the public message at the time of intervention (Foreign Policy Journal 2016b). However, the email did discuss gold's role in the decision making.

The gold dinar would have been a threat not only to the US dollar's dominance over the oil trade but also a threat to the euro since the extinction of the West African CFA franc would have been a major credibility issue for the euro as the CFA franc allows Europe – and more particularly France – to have large monetary and political influence over West Africa. Six months after the email in October 2011 Gaddafi was killed by the National Transitional Council forces of Libya – a de facto government with armed forces supplied and supported by France, United States and the United Nations (NTC 2018).

Interestingly a British newspaper The Guardian reported in November of 2014 that the Islamic State better known as ISIS was attempting to start minting coins made of gold, silver and copper in efforts to free the Muslim society from the current financial system which ISIS said to be an enslaving and impoverishing system (The Guardian 2014). In August of 2015 Independent reported about a promotional video released by ISIS which covered the details of the to be issued gold dinar (Independent 2015). Later in March of 2016 Independent reported about the failing attempt to issue the gold dinar which was mostly result of increased military activity in Syria to cut of ISIS' currency flows which were heavily dependent on oil sales (Independent 2016). Relatively speaking there is no comparison to be made between the Libyan Muamar Gaddafi who aimed to reduce the country's dependence on the prevailing financial system and the openly violent and terroristic Islamic State but as a common denominator gold was yet again discussed in the headlines of the western media from a geopolitical aspect.

The Libyan case was selected for the report since it represents a good example on gold's geopolitical aspect which is present still today almost 50 years after the abolishment of the Bretton Woods system. If Gaddafi would have tried to establish an international fiat currency the situation could have been contained financially without violent actions. The gold component made it impossible to seize the situation financially because gold in itself is

valued across the world. The incident goes to show that gold has a unique position in the world which is rarely discussed by the media. Gold has the power of disrupting economies and threatening the currently prevalent fiat currency hegemony dominated by few large nations. On the highest levels of government gold is being discussed in secrecy from the public eye.

3.1.2 Central Banks and Gold

Depending on the country there are differences in how the national gold ownership is organized. For example, the US Federal Reserve is not the actual owner of the gold which it stores in its vaults. The Federal Reserve is merely a custodian of the gold officially owned by the US Treasury which in turn is owned by the citizens of US. On the contrary in Italy the ownership of the nation's gold reserves is directly appointed to the Italian central bank. Also the decision making over the national gold reserves varies from country to country. In some countries the decision making may be dictated to the central bank and in some countries the decision making is directed to the state. In most cases, the central bank has some form influence over the national gold reserves. (BullionStar 2017b.)

Noted that there are differences around the world in how the official ownership of the gold is organized and whilst the central banks may not be the actual decision makers in every country over the gold reserves to simplify this research paper will refer to central banks when it comes to national level decisions related to gold unless otherwise disclosed. This chapter will focus on the reasons for countries and central banks to own gold, central bank gold holdings and the accumulation and repatriation of national gold reserves which has been taking place all over the world during the past decade.

Relationship Between Central Banks and Gold

The relationship between central banks and gold is covered in secrecy. As an example, the US government gold reserves have not been fully audited since the 1950s – an audit which has been later deemed as insufficient and unprofessional – although gold purchases and sales have taken place even after the last official thorough audit (BullionStar 2015). The lack of audits has spurred numerous concerns around the world whether the US actually has the physical gold or whether it has been sold and leased without public reports. The first accusations of US' insufficient gold reserves lead all the way to the 1950s, after which rumours, and claims have intensified in the gold community. Opposite concerns have it that the Chinese central bank is believed to possess multiples of the gold that they claim to have as reporting has been vague and non-transparent.

Central banks have long traditions in storing gold as a part of national reserves. As discussed in the previous chapter under the classical gold standard it was the duty of central banks to ensure the convertibility between gold and the national currency. This meant that central banks needed to hold gold reserves to be able to distribute gold to local banks when clients of those banks asked to redeem their gold. Ever since the classical gold standard central banks have been the largest entities storing and owning gold.

Even after the gold standard was abandoned central banks have continued to hold gold as a part of their reserve assets along with foreign debt obligations such as US treasuries and foreign currencies including the euro, Japanese yen, British pound and US dollar. Globally there are differences in how central bankers and government officials address gold. According to a former Federal Reserve chairman Ben Bernanke central banks hold gold merely due to traditions (Bernanke 2011). In the statement it is assumable that Bernanke was speaking on behalf of western central banks. Ben Bernanke has also said directly that he “does not understand gold” (Forbes 2013).

As in the US gold related discussions on government level are rare in the rest of the western world including Canada, Europe and Australia. The situation is somewhat different in the eastern part of the world where perceptions on gold differ from the perceptions in the west. For an example head of the Central Bank of the Russian Federation Elvira Nabiullina has reportedly said that the gold purchases conducted by the Russian Central Bank help in diversifying Russia’s wealth (Business Insider 2018d) – a statement that is not fully supported by other central bankers.

The difference in approaches can be seen in small details as well. The front page of the Russian Central Bank’s website presents live spot prices of the US dollar, euro, gold, silver palladium and platinum (CBR 2018). It is notable that there are not any equity indexes, real estate price indexes or other commodities besides these four precious metals. Whilst just a tiny detail it goes to show that precious metals including gold are in a category of their own for some countries. Also as a move towards the western gold investment standards Russia is considering removing the value added tax for gold bars in the near term future (Kitco 2019b).

Since gold related discussions are minimal compared to many other topics discussed by governments and central bankers it is better to let actions speak. The next subchapters examines the central bank holdings as well as accumulation and repatriation patterns between governments and gold.

Central Bank Holdings

Despite the vast gold accumulation of many other large countries the United States continues to be the largest owner of gold in the world holding officially over 8 133 tonnes of gold in their reserves. At the end of 2018 central banks owned over 33 869 tonnes of gold which means that the US holds officially over 24 per cent of the world's central bank gold reserves. World's official central bank gold reserves were valued at over 1,4 trillion US dollar in March 2019. (WGC 2019c.)

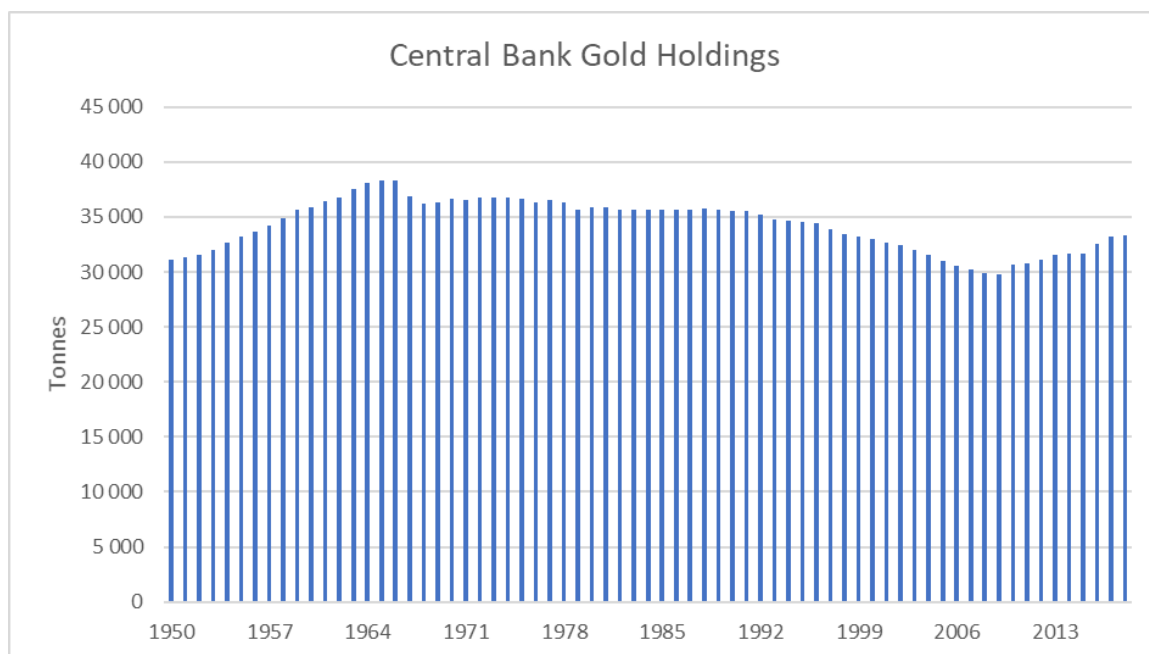


Chart 3. Central bank gold official reserves (WGC 1999b; WGC 2019c)

As can be seen from Chart 3 global central bank holdings were in a long declining trend after the height of the gold repatriation boom of the 1960s. The downtrend came to a sudden end in the first quarter of 2009 when central banks became net buyers of gold and the official gold reserve holdings turned back up. Since then there have been only a few quarters when the official central bank gold reserves have decreased.

Table 1. Official gold reserves by country (WGC 2019c)

Country	2019	2009	Since 2014	Since 2009
United States	8133,5	8133,5	0,00 %	0,00 %
Germany	3369,7	3412,6	-0,49 %	-1,26 %
Italy	2451,8	2451,8	0,00 %	0,00 %
France	2436,0	2452,8	0,03 %	-0,68 %
Russia	2113,0	531,9	103,04 %	297,29 %
China	1852,5	600,0	75,75 %	208,76 %
Switzerland	1040,0	1040,1	-0,01 %	-0,01 %
Japan	765,2	765,2	0,00 %	0,00 %
Netherlands	612,5	612,5	0,00 %	0,00 %
India	600,4	357,7	7,65 %	67,84 %

Table 1 presents the list of top 10 largest official national gold reserves as of the beginning of 2019. As can be seen from the table above the list remains heavily populated with western countries which have not seen significant changes in their gold reserves over the past ten years. On the other hand China and Russia have risen aggressively to the list with both countries tripling their gold reserves over the past ten years.

The trend of central bank accumulation does not limit to China and Russia. Many smaller sized countries have also started accumulating gold reserves since 2009. Currently there are two main observable trends in central bank holdings which are accumulation and repatriation. Many eastern central banks have been accumulating gold for many years now and some western countries have been repatriating their overseas gold reserves at a pace not seen since the 1960s.

Gold Accumulation

In 2018 official central banks holdings saw the largest gold inflow in over 50 years with central banks accumulating 651,5 tonnes of gold compared to 374,8 tonnes accumulated in 2017 (WGC 2019a). Referring to the World Gold Council's data presented in Chart 3 central banks were net sellers of gold until Q1 2009 when global central banks gold reserves bottomed at little less than 30 000 tonnes and the trend reversed. Since then central banks have accumulated over 3 800 tonnes of gold to their foreign exchange reserves, an increase of close to 13 per cent on reported reserves. It is important to keep in mind that the data is based on official figures which most likely do not tell the whole story.

Some countries have been more transparent on their gold holding compared to others with Iran, China and the US being most secretive on their gold reserves.

Table 2. Official gold reserve accumulation by country (WGC 2019c)

Country	2019	2009	Since 2014	Since 2009
Hungary	31,5	3,1	924,27 %	924,27 %
Tajikistan	22,3	2,2	293,18 %	905,62 %
Jordan	43,5	12,8	169,23 %	241,21 %
Qatar	31,3	12,4	151,78 %	151,78 %
Kazakhstan	350,4	72,0	135,69 %	386,93 %
Turkey	253,5	116,1	118,34 %	118,34 %
Russia	2 113,0	531,9	103,04 %	297,29 %
China	1 852,5	600,0	75,75 %	208,76 %
Iraq	96,3	5,9	28,95 %	1541,17 %
Poland	128,6	102,9	24,99 %	24,98 %
Serbia	20,4	12,9	23,23 %	58,79 %
India	600,4	357,7	7,65 %	67,84 %
Belarus	47,0	15,0	5,83 %	213,24 %

Table 2 above presents the top 12 countries which have been the largest accumulators of gold over the past five years. To refine the results countries which official gold reserves are worth less than 900 million US dollars have been excluded. Contrary to the data presented in Table 1 this table is mostly populated with eastern countries. Data from 2014 was selected as the benchmark of this table to highlight the countries which have been active gold accumulators more recently. Again it is important to remember that the figures are based on officially published government figures.

China for example has been very secretive on its gold purchases and unlike most other countries China does not update its gold reserve figures actively. In April 2009 China announced to have bought 454 tonnes of gold between 2003 and 2009. Next update on China's gold reserves came in July of 2015 when China claimed to have purchased 604 tonnes of gold between 2009 and 2015. After this announcement there were six consecutive quarters during which the Chinese government issued updates on its gold reserves. Between Q2 2015 and Q4 2016 China reportedly added a total of 184 tonnes of gold to its reserves. At the end of 2018 China began to update its gold reserves once again and today China's official holdings stand at 1 852,5 tonnes which makes China's gold reserves the seventh largest in the world after the United States, Germany, IMF, Italy, France and Russia. (WGC 2019c.)

Due to China's transparency issues it is difficult to assess when did China actually begin accumulating its gold reserves, but the official figures point to early 2000s. According on the reports issued by the Chinese government China accumulated its gold reserves throughout 2003 and 2016. This combined with the most recent updates from China make it likely that the Chinese government is and has been accumulating its gold reserves on consistent basis throughout the 21st century.

The official figures presented by China are very likely to be far from reality not only when it comes to gold but also almost all economic data – a subject addressed in detail in chapter 4.3.3. Some researchers such as Jan Nieuwenhuijs – precious metals analyst specialized in the China's gold market (previously known as Koos Jansen) – have suggested that China is likely to hold much larger gold reserves than what the official figures claim. Nieuwenhuijs suggested in an article written in July of 2017 and published by BullionStar that the People's Bank of China (PBOC, China's central bank) may be holding as much as 4 000 tonnes gold in reserves which would make China's gold reserves world's second largest (BullionStar 2017a).

Nieuwenhuijs has written several thorough research articles on gold and he claims that although speculative the 4 000 tonne figure is a conservative estimation on PBOC's actual gold reserves. In other words the actual gold reserves held by China may be much larger even to the extent of thousands of tonnes. In short Nieuwenhuijs based his estimation on statements made by the China Gold Association (CGA), China's domestic mining figures and China's gold imports. In another detailed article which addresses the PBOC's gold accumulation program Nieuwenhuijs estimated that theoretically PBOC could be accumulating as much as 500 tonnes of gold each year via both domestic mining and international gold markets (BullionStar 2017c).

Another large country to accumulate its gold reserves has been Russia which official gold reserves have grown from 531,9 tonnes in 2009 to over 2 100 tonnes based on WGC data presented in Table 2. Compared to China Russia has been updating its gold reserves on regular basis via monthly updates published by the Central Bank of Russia.

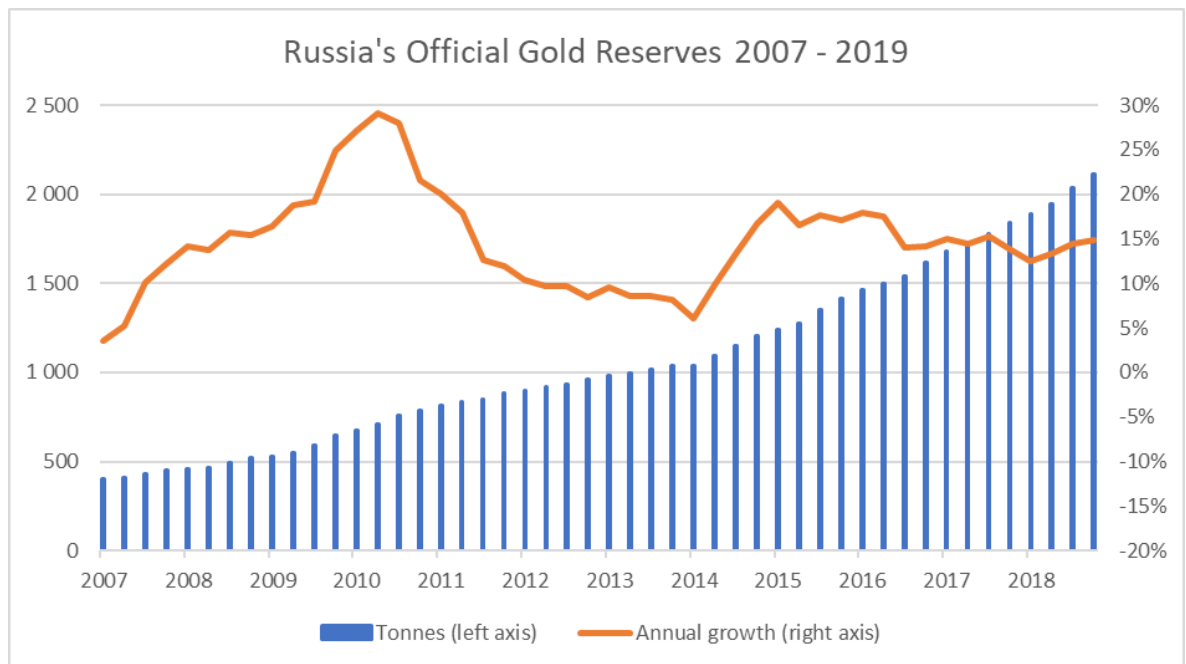


Chart 4. Russia's official gold reserves since 2007 (WGC 2019c)

As can be seen from Chart 4 presented above Russia has been steadily accumulating its gold reserves since the beginning of 2007. Russia's official gold reserves have grown for 48 consecutive quarters with purchases growing larger in absolute volume over the past few years. The orange line in Chart 4 represents the annual growth rate of Russia's gold reserves which hit its peak in early 2010 at almost 30 per cent. After the peak annual growth fell until 2014 when the crisis in East Ukrainian broke loose, and Russia invaded the Crimea peninsula which resulted in heavy economic sanctions against Russia. Since then the growth rate has stabilized at around 15 per cent per year.

Other large countries which have been accumulating gold reserves include Kazakhstan, Turkey, India and Iraq. For an example Kazakhstan has been accumulating gold since 2011 and has since grown its gold reserves by close to 300 per cent from less than 70 tonnes to over 250 tonnes (WGC 2019c). Both Kazakhstan and Turkey as well as India and Iraq have solid trade networks between each other as well as with China and Russia.

Since 2009 Russia, China, Kazakhstan, South Korea, Mexico, Haiti, Mongolia, Hungary, Paraguay, Tajikistan, Burundi, Belarus, Jordan, Sri Lanka, Bangladesh, Mauritius and Kyrgyz Republic have all at least tripled their national gold reserves. Some countries have joined the accumulation program as recently as in 2018. Burundi for an example purchased over 35 tonnes of gold in 2018 prior to which the country's gold reserves had flat-lined close to zero for the whole 21st century. Hungary also demonstrated similar actions as its gold reserves jumped tenfold from 3,1 tonnes to 31,5 tonnes in 2018. (WGC 2019c.)

The Bank of International Settlements (BIS) has also increased its gold reserves by 259,1 tonnes or in other words 216,6 per cent over the past ten years. Currently the BIS' gold reserves stand at 378,7 tonnes down from a high of 617,5 achieved in Q3 of 2017 but still significantly up from the low of 104,6 reached just little over a year earlier in Q3 of 2016. (WGC 2019c.)

Gold Repatriation

As was discussed previously in the 3.1.1 chapters subchapter discussing the Bretton Woods System European countries conducted large scale gold repatriation in the 1960s. This led to high inflation in the US due to the dollar's gold backing. Similar to the 1960s gold repatriation has yet again emerged as a trend in Europe as Germany, Austria, The Netherlands, Turkey and other countries have been repatriating gold from the US, France and Britain to vaults in their homelands.

In 2017 Germany announced that it had received full delivery over its latest gold repatriation act which included repatriating 374 tonnes of gold from Paris and 300 tonnes from New York FED. The repatriation project was initiated in 2013 when Germany requested delivery from the Fed within five years. The Fed managed to negotiate a seven year delivery schedule due to logistical difficulties although some analysts have criticized this explanation to be untrustworthy. In essence analysts claim that the Fed does not have enough physical gold to turn over such amounts on short notice even though the US Treasury claims that the Fed is in possession of over 8 000 tonnes. Previously, Germany had brought back 940 tonnes of gold from the Bank of England and after the Fed's final delivery Germany was left holding little over 50 per cent of its total gold reserves on German soil with 36,6 per cent still held in New York and 12,8 per cent held in London. (Kitco 2017b.)

After Germany's move towards gold repatriation in 2013 the central bank of The Netherlands De Nederlandsche Bank (DNB) also began repatriating its gold reserves from the US. A total of 122,5 tonnes of gold was brought from the US to Amsterdam in November 2014. What makes DNBs repatriation case interesting is that the whole project was carried out in complete secrecy whereas Germany's seven year long repatriation plan was made public once negotiations had finished. After the repatriation the Dutch had increased their domestic holdings by 182 per cent from 67,4 tonnes to 189,9 tonnes although another 189,9 tonnes still remain in the US, 122,5 tonnes remain in Canada and 110,3 tonnes in UK. (Bullionstar 2019a.)

The Austrian National Bank (OeNB) announced in 2015 that the bank aims to hold 50 per cent of the country's national gold reserves inside Austrian borders, 30 per cent in London and 20 per cent in Switzerland by 2020. During the same year Austria repatriated 15 tonnes of gold from London. (Reuters 2015.) Hungary also began its own move towards gold repatriation in 2018 repatriating 100 000 ounces held in London (RT 2018a). Hungary also caused a slight media fuss in the global investment community when the country increased its gold reserves by 1 000 per cent from 3,1 tonnes to 31,5 tonnes according to an announcement published in October by the central bank of Hungary the Magyar Nemzeti Bank (Bullionstar 2018b).

The gold repatriations have been tied to nationalist movements arising in Europe but taken that some of the repatriations have taken place in complete secrecy this is unlikely to be the sole reason behind the repatriations in Europe. As gold is not officially recognized as money by these western central banks a significant question arises from the repatriation programs namely why these countries have suddenly began repatriating their gold reserves in a rapidly digitalizing world if gold serves no monetary use. On the other hand some countries have been more vocal over their gold repatriation acts.

Kitco News reported in April of 2018 that Turkey had repatriated all of its gold holdings held at the US Federal Reserve in 2017. Turkey's President Recep Tayyip Erdogan has also been publicly calling for IMF loans to be settled in gold rather than US dollars – a statement very unlikely to be heard from western politicians. (Kitco 2018b.) As was discussed in the previous subchapter, Turkey is also amongst the top countries accumulating its physical gold reserves.

Venezuela jumped to the headlines in early 2019 as news agencies around the world reported that the Bank of England (BoE) refused to return gold owned by Venezuela after the central bank of Venezuela had requested a withdrawal. The gold requested for delivery was worth over one billion in US dollar terms and the BoE stated that the request to prevent delivery came from top US officials including Secretary of State Michael Pompeo and National Security Adviser John Bolton. (Bloomberg 2019b.)

As with the case in Turkey relations between Venezuela and the US have been tense for a long time and it can be argued that the US' pressure is not focused on gold but the overall economies of both Turkey and Venezuela. Nevertheless news like these remind us that physical gold holds a role in geopolitics. Even though it has not been said out loud there seems to be some concern over gold's safe custody in locations previously held creditable like the New York FED's vault in Manhattan and the BoE's vaults in London.

3.1.3 Conclusion on Gold's Monetary Aspect

Currently gold is not considered to be money at least in the eyes of Keynesian economists. While Keynesian economics remain to prevail as the globally dominant school of economics economic instability has been drawing more attention towards gold since the 2008 financial crisis. Keynesian central banks have started accumulating and repatriating gold reserves even though some of the world's most reputable central bankers such as Ben Bernanke are even claiming not to understand gold.

To understand gold it is important to understand the monetary aspect of gold. History, central bank reserves and gold's unique properties make gold the ideal monetary unit which it is still considered to be in certain parts of the world. Some analysts and economists including James Rickards – a bestselling author and globally known economist – have even theorised that the global monetary system is actually a gold-based system since central banks remain to be the largest gold holders all around the globe and the currencies in circulation are backed by trust towards the issuer – central bank – which in turn is backed by the gold reserves held at the central bank. After all the US holds close to 75 per cent of its foreign exchange reserves in gold (WGC 2019c).

A common denominator for reserve currencies is their wide acceptance around the world. The difference between a reserve currency and a local currency is that the reserve currency is often widely accepted around the world whilst a local currency is often only accepted in the country of issuance. Small local currencies may also be difficult to exchange to the desired currency as not all local currencies are accepted by the banks and exchange offices in different countries. Even if the currency is accepted the spread for the currency change could be very high if the currency in question is a small and relatively illiquid. Therefore local currencies are mainly appreciated in the country of issuance. Following this logic gold fits the requirements of a reserve currency well.

Gold is accepted, appreciated and priced in every country in the world either via jewellery stores, bullion dealers or on the black market. Western world has mostly isolated gold to be solely a jewellery item and most gold jewellery in western countries is sold at or below 18 karat fineness. It is not uncommon to buy jewellery branded as gold, but which gold content might be less than 40 per cent. However, this is not the case in for example Asia where gold is often sold as 22 karats or even at 99,99 per cent purity which also referred to as four nine fineness. Pure gold has the same value around the world with very small deviations and spread. Just as in many other hard commodities and currencies international trade helps to keep the value of gold from deviating vastly between regions.

When it comes to international eminence gold enjoys the same level of trust and accountability as the US dollar. Whereas local currencies like the Vietnamese dong or the Argentine peso may be impossible to convert into the local unit of account gold is internationally recognized, appreciated and can be traded with a relatively tight spread in any major city in the world. Gold is still to this date trusted as a safe haven asset around the world and has been so for at least 3 000 years – something which an executive order issued by a president cannot change.

When asked about the monetary aspect of gold interviewees mostly agreed that gold has a monetary aspect. Out of the list of interviewees David Morgan is amongst most educated on gold's properties as an element, the history of gold and the whole gold mining sphere due to his extensive career. In the interview, Morgan said that "The evidence is very clear -- if you'd argue at court there would be absolutely no way for an objective jury to come to a conclusion after the argument that gold isn't a monetary asset even today" (Morgan 6.12.2018).

To conclude gold is and should be considered to be a monetary asset which is widely used and appreciated around the world. Based on gold's history, wide acceptance, the political secrecy over gold and nation level demand it is justifiable to say that gold is still to date the ultimate store of value. The third scenario presented in chapter 4.3 discusses global monetary developments concerning gold and central banks.

3.2 Gold Markets

As most commodities, gold is traded in physical spot markets, futures exchanges and Over The Counter (OTC) derivatives markets around the world. Largest gold markets include the London and Zurich Locos which provide OTC products including spot, forwards as well as loan lease deposits, the COMEX futures exchange operated by the New York Mercantile Exchange and the Shanghai Gold Exchange (SGE) which provides both futures and OTC trading including spot. The essential difference between OTC and exchange traded gold is flexibility and privacy. Exchange traded futures contracts are standardised by contract size, delivery methods and expiry dates while OTC transactions are always tailored to the needs of the parties involved although market specific customs apply. In addition, the counterparty risk in an exchange traded derivatives contract is distributed to the exchange whilst in OTC transactions the counterparty risk is between the parties involved (LBMA 2017).

The global gold market is currently under a colossal transition in terms of market transparency and trade activity. According to the London Bullion Market Association (LBMA), over the recent years the global gold market's transparency has been improved by new data in form of publication of import/export data of large gold trading countries, improved central bank data, daily information on key investor flows and London vault holdings (LBMA 2018d). The LBMA is a globally recognized standard setting organization for physically traded OTC precious metals including gold. In addition, to setting standards for physical gold deliveries and gold refining, LBMA's responsibilities include ensuring the integrity of the market participants and the quality of the gold being traded in London (LBMA 2018b). The LBMA has also started reporting its members' OTC trade activity in London and Zurich Locos which have previously been highly secretive markets. This chapter examines the properties, trade instruments and the structures of gold markets.

3.2.1 London Loco & Zurich Loco

The London Loco and the Zurich Loco are both OTC precious metals markets which consists of spot, swap, forward, option and loan lease deposit markets. The London Loco is considered as the world's oldest currently functional physical gold delivery location and is currently estimated to be the largest physical gold market by trade volume (WGC 2019b). The Loco markets are considered as the main precious metals markets in the world with London focused on gold and silver deliveries and with Zurich focused on platinum and palladium deliveries, although both markets offer deliveries in all of the four precious metals according to the needs of the market participants (LBMA 2017). As with other OTC markets, the gold Loco markets are opaque as transactions are often held in secrecy between the two parties involved. The London Loco has been considered as the main gold market and is conceived as significantly larger than the Zurich Loco in gold settlements. Therefore, this subsection will focus on the London Loco and its properties.

More recently the London Metals Exchange (LME) – owned by Hong Kong Exchange and Clearing (HKEX) – the World Gold Council and LBMA joined hands and introduced gold and silver futures to the London Loco product family. The LME gold futures contract is tradable via LMEselect electronic trade platform as well as over the counter via inter-office telephone market. (LME 2019a; LME 2019c.) The trade volumes of the LME gold futures are rather minuscule compared to the currently dominant COMEX gold futures contracts. According to LME, the average daily trade volume between July 2017 and July 2018 was 5 000 lots across the whole LMEprecious product scale including both gold and silver futures (LME 2019b). In comparison, the average daily trade volume in COMEX gold futures alone is over 380 000 lots (CME Group 2018b). While the LME gold futures contract is an

exchange traded derivative, it is settled the same way as other products in the London Loco and the contracts can be traded OTC the same way as other Loco products.

The most important datapoints provided by the London Loco are the AM and PM fixes which set the international standard for the price of gold twice a day during business days at 10:30 and 15:00 London time. The gold fixing was originally introduced at London Loco in 1919 and was considered as the benchmark price for gold globally. (LBMA 2017.) In March 2015 the London gold fixing was replaced by the 'LBMA gold price' but changes to the fixing mechanism were rather minimal and that is why it is still common to hear people discuss the London gold fix. As was during the gold fix, the price is still set twice a day as AM and PM prices via an auction process but compared to the old system the new system is compliant with regulatory bodies such as the International Organization of Securities Commissions (IOSCO). The new system is also electronically managed via ICE Benchmark Administration (IBA) auction platform and is administrated by a chairman which is independently appointment by the IBA. There are currently 13 members in the LBMA gold price discovery process which set the price in the auction process. (WGC 2018p.)

The London Loco itself is not directly regulated by a sole operator. Regulation of the London Loco falls into two categories: one regulates the market itself and the other regulates the market participants. The market participants are mostly regulated by the British Financial Conduct Authority (FCA) whilst the market itself is only partially regulated by the FCA. The FCA regulates the derivatives side of the London bullion market including for example swaps and options, however, according to the LBMA, the FCA does not regulate the spot, forwards and gold deposits. (LBMA 2017.)

Although the LBMA gold price discovery mechanism is compliant with regulatory bodies, these parts of the London Loco are not directly regulated by 3rd party authorities. Instead, the rules of the market are set out by the Global Precious Metals Code which stems from The London Code of Conduct for Non-Investment Products, also known as the NIPs code. As the NIPs, the current code of conduct is a set of guidelines drawn up by the market participants together with the Bank of International Settlements. (LBMA 2017.) Partially due to this obscure regulatory model, the OTC gold market is widely considered as a wild west amongst the gold community as there are no directly responsible regulators.

In late November of 2018, the LBMA started publishing trade volume reports called the LBMA-i. The LBMA-i reports include trade volumes reported to LBMA by its members, such as precious metals OTC market makers and so-called full members which include a wide range of companies from all sections of gold's life cycle (LBMA 2018a; LBMA

2018d). As a result of the LBMA-i releases, the World Gold Council has changed its estimations over London Loco's daily volumes several times in late 2018 and early 2019.

Prior to the new reports, the World Gold Council had estimated that the gold market's total daily liquidity (including global OTC, futures and ETF transactions) would sum up to almost 200 billion US dollars (WGC 2018o). However, once LBMA started publishing its weekly trade volume reports, the figure was reassessed greatly lower at 112 billion US dollars. As of April of 2019, the WGC's estimations for the total average daily trade volumes range from 101 to 234 billion US dollars, highlighting the difficulties that even industry insiders and professionals face in accessing the size of the global gold market (WGC 2019b). Solely based on the LBMA-i reports the actual daily trade volume of the London Loco could be less than 70 billion US dollars (WGC 2018o).

In an explanatory report published by the LBMA with the first data series of the new LBMA-i weekly report Mathew Turner – precious metals analyst at Macquarie Capital Europe Ltd – wrote that the data's "importance should not be understated" and that the OTC trade volume data was a big piece in the puzzle of solving the actual size of the global gold market (LBMA 2018d). Although true in the sense that the LBMA-i report is the first consolidated glimpse to gold's OTC market, the actual data series is almost ridiculously vague and leaves much to be desired.

The LBMA-i data series consists of a CSV file which includes a 12 by 9 table presenting consolidated average daily volumes of London and Zurich Locos spot, swap/forwards contracts, options contracts and loan lease deposits over various expiries but no further details are published (LBMA 2018c). The LBMA-i data is surely better than nothing, but in reality, the LBMA-i data is relatively close to nothing in comparison to the intra-second individual transaction data available from COMEX. With so little information published together with the reports, the LBMA-i data lacks seriously credibility as there are no explanations on how the data is collected, what are the requirements from the reporting parties and what evidence is collected. In essence, the data is based on reports filed by the LBMA participants and relies solely on internal bookkeeping and reliability of the participants which has been questionable in the past, as discussed further in chapter 3.5 which examines gold market manipulation cases.

Even though the volumes in the first weekly LBMA-i reports have definitely been below expectations of the gold community, it is important to acknowledge that the reports consist only of the data provided by members of the LBMA. Non-member OTC trade data remains

secret and is likely to remain so in the near term future regardless of efforts towards transparency. The current state of change in OTC reporting makes analysing the total structure of the gold market very difficult. Therefore, there is not enough data to draw large conclusions on the OTC gold market for the time being.

3.2.2 COMEX

Currently, the dominant gold futures exchange in the world is COMEX which is a part of the New York Mercantile Exchange – one of the largest commodities futures exchanges in the world. According to the World Gold Council COMEX gold futures exchange an average daily volume of over 40 billion US dollars (WGC 2018o). The COMEX gold futures exchange is at least as significant or even more significant compared to the London Loco since most if not all gold market participants have access to COMEX while the London Loco is more common when dealing in extremely large quantities of physical gold.

Based on previous estimations provided by the World Gold Council on the gold market liquidity COMEX was thought to account for only 15 per cent of the total yearly liquidity in gold trade. This estimation was quickly revised after the release of the first LBMA-i data series and the World Gold Councils estimation now stands at 36 per cent (WGC 2018o). In COMEX both gold futures and futures options are traded and unlike the Loco markets, COMEX is directly regulated by Commodity Futures Trading Commission (CFTC) which is considered as a general derivatives regulator in the United States. The CFTC was at the heart of the financial crisis in 2008 and the Dodd-Frank Wall Street Reform.

Although regulation is arguably tighter in COMEX relative to the London Loco as the market is directly regulated gold futures market manipulation cases are rather frequent. The CFTC filed a total of 83 enforcement acts in 2018 of which 26 were related to market manipulation, false reporting or spoofing (CFTC 2018a). COMEX has a bad reputation amongst the gold community which was also notable from the interviews. This is primarily due to exposed manipulation cases which have often resulted in relatively small penalties for the parties conducting the manipulation. There have been at least five significant market manipulation cases between 2016 and 2019 which have involved gold futures traded in COMEX (CFTC 2018c; CFTC 2018d; CFTC 2018e; CNBC 2018b; Reuters 2016). Some of these cases are further examined in chapter 3.5.1.

3.2.3 Shanghai Gold Exchange

The Shanghai Gold Exchange (SGE) and the Shanghai International Gold Exchange (SGEI) are some of the latest major developments in the gold space. The SGE was

founded in 2002 by the Bank of China to facilitate intramarket gold trade in China. Later in 2014, the SGEI was formed to expand the reach and influence of the Chinese physical gold market. The SGE can be divided into two segments which are futures and spot market. Unlike in both London Loco and COMEX gold trade in Shanghai is priced in grams rather than ounces and the fineness of the bars traded are not set by the LBMA good delivery standards but Shanghai's own standards. Most gold traded in Shanghai is purified to 99,99 per cent purity whilst the LBMA good delivery standards require 99,5 per cent purity.

In 2016 SGE introduced the Shanghai Gold Benchmark Price which is an RMB denominated reference price set twice a day at 10:15 and 14:15 Beijing time through a centralised auction process hosted on the SGE. The benchmark price was introduced "To provide a tradable and reliable RMB-denominated gold benchmark price --" and "To improve the development of China's financial market" according to a white paper published by the SGE. (WGC 2018p.) Trading takes place in three separated sessions with breaks in between opposed to one continuous session as in Loco and COMEX (Bullionstar 2019c).

Compared to other gold marketplaces the SGE has many unique aspects to it in addition, to the higher purity standards and the pauses between trade sessions. The Shanghai gold exchange was the first exchange in the world to introduce publicly tradable standardized gold coins in September 2018 when the 30g Chinese panda became the first exchange traded gold coin. It is noteworthy to mention that in 2015 the Chinese began using grams instead of troy ounces in their official gold panda coin series. (Bullionstar 2018a.) This also applies to the delivery size of gold bars traded in SGE. Most bars traded in SGE are either 50g, 100g or 1kg bars although less pure 3kg and the LBMA 12,5kg bars are also available (Bullionstar 2019b).

Although revolutionary with its unique elements the World Gold Council's estimates that the Shanghai gold markets including both physical and futures trading represent little over seven per cent of the total yearly trade volume in gold (WGC 2018o). Prior to the addition of gold futures via Shanghai Futures Market (SHFE), the SGE was the world's largest purely physical spot exchange. Despite the small size relative to other gold exchanges, SGE has been expanding its influence abroad. In 2017 SGE made its first major approach towards the European market by publishing its intentions to expand the use of the yuan-denominated gold benchmark by listing the price on the Budapest Stock Exchange. On the same year, SGE had listed the yuan-denominated gold benchmark on the Dubai Gold and Commodities Exchange. (SCMP 2017.)

3.3 Price Driving Fundamentals of the Gold Market

This chapter examines gold's properties as an element, most significant supply and demand trends of the physical gold market as well as the structure of the gold mining industry and its challenges coming forward. Chapter 3.1.2 briefly discussed the demand trends of central bank gold accumulation whereas this chapter will focus more on other aspects of the supply and demand function. This chapter also provides the basis for the fundamental analysis presented in chapter 4.1.

Whilst supply and demand are at the core of price action, the reasons behind supply and demand are more important and thus this chapter is deliberately short. The demand-side is examined in depth in the market analysis segment of the report. As a general guideline, the supply-side of gold is relatively stable although as is discussed in chapter 3.3.3 there are signs that the world is experiencing "peak gold" referring to peak in gold production.

As the gold market operators come from a vast variety of industries, from banking to technology and from investments to medical usage, it is very difficult to access the gold market as a whole. The opaque nature of the physical gold market, the secrecy of tech firms when it comes to their resource usage and secrecy in government reporting make the assessment process very time consuming and difficult. The World Gold Council (WGC) aims to produce analysis on the gold market, but even with a team of specialists, assessments are made on best effort basis. This means that most of the figures presented are not necessarily one hundred per cent, but they are the best estimations available for this report.

The World Gold Council has numerously adjusted its gold demand figures in reports from different years. Partly for this reason, the WGC was asked to provide a single data series for the purpose of this report of gold's supply and demand trends dating back 20 years. An interview was also requested from the WGC, but efforts to reach the WGC were unsuccessful as they never replied to any of the queries sent. This means that the data used in this report concerning gold's supply and demand trends is collected from the WGC's publicly available reports and their website.

3.3.1 Gold's Properties as an Element

Gold possesses and combines unique properties which have been found useful across a variety of industries including investments, jewellery, technology and more recently healthcare. As was discussed in chapter 3.1.1 the earliest uses for gold were in jewellery due to gold's lucrative look after which gold found its place in monetary systems around

the world. Later the modern society has found many different uses for gold on a variety of industries.

Gold is one of the least reactive elements on the periodic table and comes second only to platinum as the least reactive metal on the periodic table (BBC 2019). For example in natural state, gold does not react at all with oxygen which means that gold is almost immune to natural corrosion. Gold is also the third most electronically conductive metal on earth after silver and copper (All Metals Fabrication 2018). Due to the combination of corrosion resistance and electrical conductivity, gold is an ideal material for electronic insulation and is widely used as a coating material in electronic components such as central processing units also known as CPUs. Due to a relatively high price per weight, the technology industry often uses microscopically thin layers of gold for coating circuits which may have copper or silver wiring inside.

Gold is also highly malleable which means that gold can be easily molten and shaped. The malleability of gold comes from its low degree of hardness and low melting point which make gold easy to work with across industries. Gold sits in the middle of the spectrum with a melting point of 1063 Celsius degrees or 1945 Fahrenheit which is lower than for example nickel's melting point of 1453 C or 2647 F but much higher than lead's melting point of 327 C or 621 F (The Engineer ToolBox 2019a). The low hardness of gold is easy to notice from 24 karat gold jewellery which is too soft to make mechanical jewellery locks but instead locks in 24 karat gold jewellery are loops which are bent open and close.

Gold belongs to the group of heavy metals due to gold's immensely density. At room temperature, gold weighs 19,3 grams per cubic centimetre which is about the same as plutonium which weighs 19,8 grams per cubic centimetre at room temperature. By comparison gold is over seven times heavier compared to aluminium and over two times as heavy as iron. (The Engineer ToolBox 2019b.) The immense density coupled with gold's high malleability means that an ounce of gold can be forced into a translucent sheet just 0,00018 millimetres thick which as wire would reach about 80 kilometres (WGC 2019d).

Due to gold's low reactivity, medical uses for gold have begun to emerge along with innovations in nanotechnology. For example gold can be used to transmit drugs into cancer tissue and gold nanoparticles can also be used in gene therapy, tumour detection and radiotherapy dose enhancement (WGC 2018a). An ancient saying goes that gold kills bacteria on contact which is not exactly how it goes but instead due to gold's oligodynamic effect bacteria is unable to grow on gold making gold partly self-sanitising. This is also why gold is still used in the dental industry.

Gold's diverse aspects make it a very unique element which enjoys demand from a variety of different industries which as a whole create gold's demand-side. Next chapter examines gold's demand-side trends and details.

3.3.2 Gold Demand

Global gold demand can be divided into four main segments which are by size jewellery, investment, central bank and technology demand. Still to this date jewellery demand remains as the largest form of physical gold demand accounting for over 50 per cent of annual gold demand. The second largest sector is investments which includes both private bullion investors as well as ETFs and similar products. The investment sector makes up roughly 30 per cent of the annual gold demand while the third and fourth sectors – namely central banks and technology – account for the rest 20 per cent of the demand-side. (WGC 2019a.)

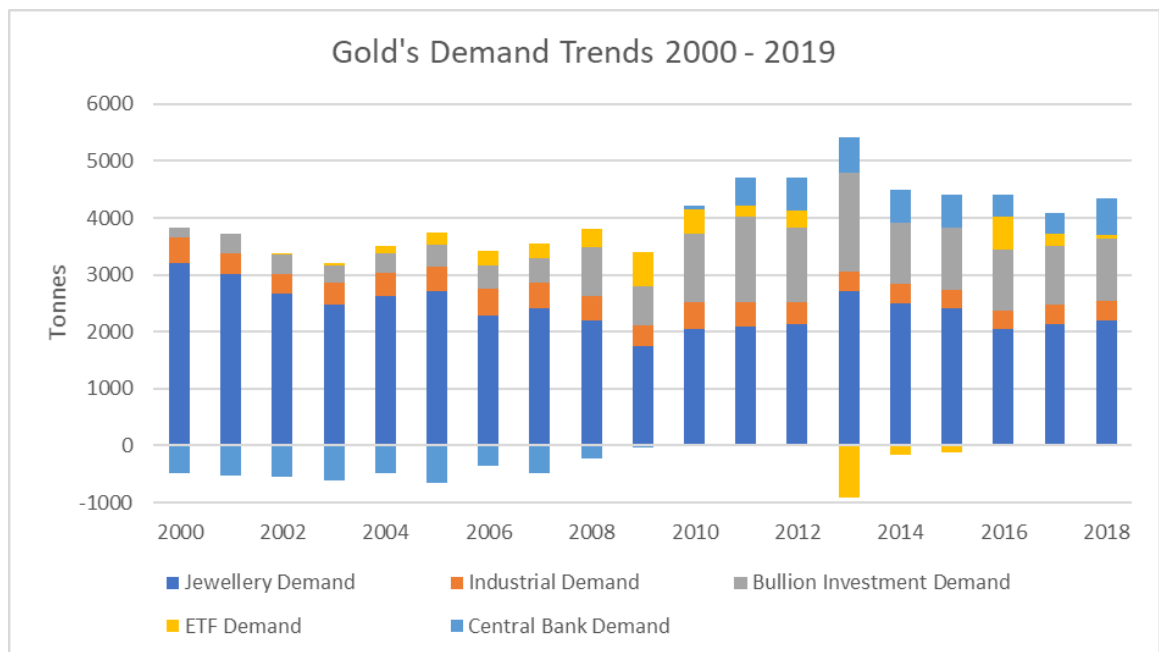


Chart 5. Gold's demand trends (WGC 2012; WGC 2019a)

Over the past 19 years gold's annual demand has remained relatively stable ranging between 3 100 and 4 800 tonnes. Chart 5 presents the distribution of gold's annual demand during the 21st century. It is important to keep in mind that the figures presented are based on official data and partly estimations from the World Gold Council. As was discussed in chapter 3.2.1, the World Gold Council has estimated the London Loco to be the largest gold market in the world but since OTC-data has not been transparent the first official figures from LBMA have significantly missed the estimations. Chapter 4.3.1 examines the

trustworthiness of the economic data provided by China as there are reasons to believe that the official figures may be far from the reality.

As a guideline some major demand trends currently in the physical gold market include the rise in central bank interest towards gold bullion, change in jewellery demand behaviour after the financial crisis of 2008 and the rise of physically backed gold ETFs. The following subchapters discuss historical gold demand and demand trends by sector.

Jewellery Demand

According to the Gold Demand Trends Full Year 2018 report published by the World Gold council jewellery demand accounted for 50,6 per cent of gold's total yearly demand. The jewellery industry consumed a total of 2 200 tonnes of gold in 2018 which remains to be in the lows of the 21st century. In 2017 jewellery demand was up about four per cent from 2016 but in 2018 jewellery demand was relatively stagnant declining a mere 0,9 tonnes from 2017. (WGC 2019a)

The report suggested that China continues to be the largest jewellery consumer in the world with Greater China's jewellery demand totalling 729,2 tonnes in 2018 (up 3,9 per cent from 2017) which is over one third of the global jewellery demand. India was the second largest jewellery consumer at 598,0 tonnes, down less than one per cent from last year, and the US was the third largest consumer at 128,4 tonnes up 3,8 per cent from 2017. Together the Greater China area including Hong Kong and Taiwan together with India consumed over 60 per cent of the world's jewellery demand for gold. (WGC 2019a.)

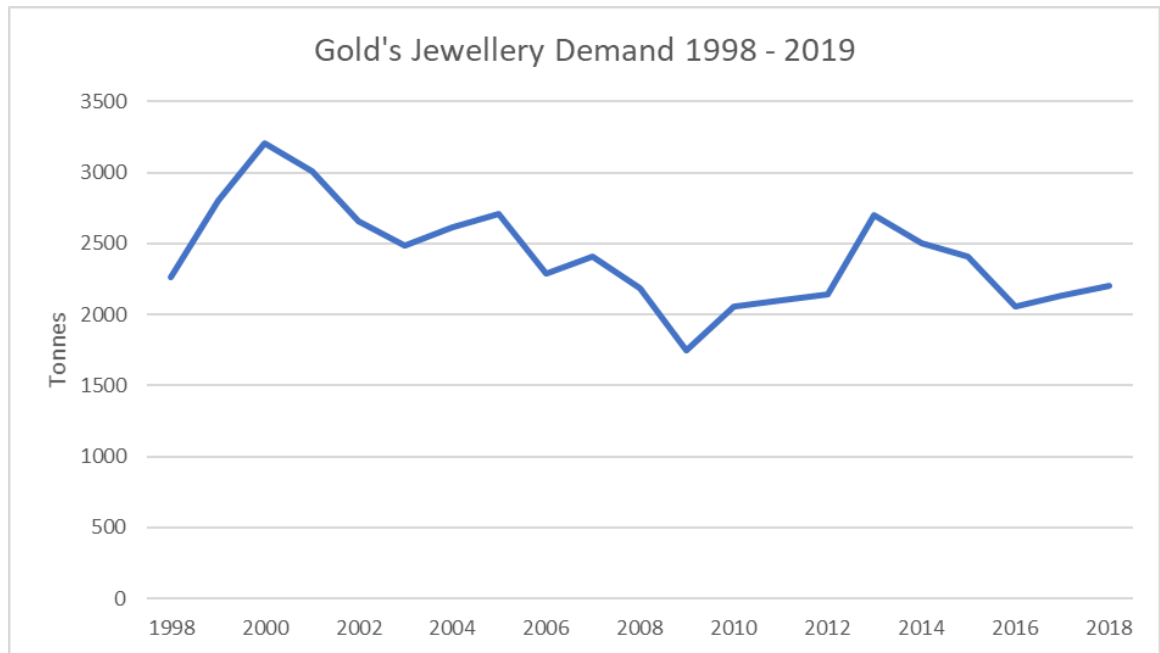


Chart 6. Gold's jewellery demand (WGC 1999a; WGC 2000; WGC 2012; WGC 2019a)

As can be seen from Chart 6, gold's jewellery demand tends to have an inverse correlation with gold's price. From the end of the 1990s up until 2009 this correlation held through but after 2009 something changed. Although gold prices rose in 2010 and 2011 so did jewellery demand. In 2013 gold's US dollar price fell by thirty per cent and as a result gold's jewellery demand spiked over 26 per cent. Although gold's price in the US dollar is higher than what it was in 2008, 2009 and 2010 jewellery demand is on the same level as it was in these years. Excluding data prior to the financial crisis of 2008, the jewellery demand looks to be in an uptrend and there seems to be a somewhat positive correlation between the price of gold and jewellery demand apart from 2013.

Gold's jewellery demand has trended down from the beginning of the century, but the declining trend saw an end in 2009 which at least according to the World Gold Council marked the only year in the 21st century when gold's yearly jewellery demand was less than 2 000 tonnes. The change in atmosphere due to the 2008 financial crisis is shown clearly as gold prices began to rise again in 2009 which resulted in an increasing trend in jewellery demand. The financial crisis of 2008 also propped up the investment demand for gold including gold ETFs and similar products which are examined in the next subchapter.

Investment Demand

Investment demand, as described by the World Gold Council, includes both private bullion coin and bar demand as well as the demand from physically backed investment vehicles such as ETFs. Compared to gold-backed ETF's private bullion demand typically accounts for a significantly larger portion of the total investment demand on yearly basis. Officially investment demand is the second largest demand segment for physical gold. Total investment demand was 1 159,1 tonnes or 26,7 per cent of gold's total demand in 2018. Investment demand was down seven per cent from previous year which was mainly due to a significant drop in the demand for ETFs. (WGC 2019a.)

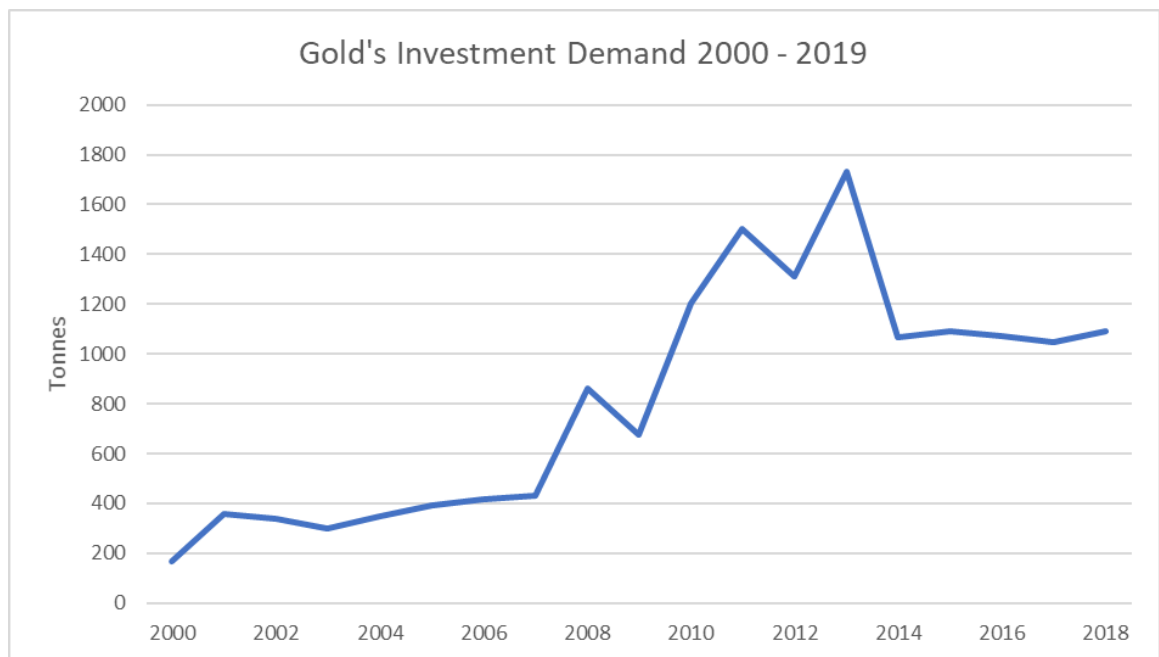


Chart 7. Gold's investment demand (WGC 2012; WGC 2019a)

Chart 7 illustrates the bullion coin and bar investment demand for gold excluding the ETF demand. It is important to note that the data consists of two different data series from the WGC which may have affected the results at the point where the data series meet – between 2009 and 2010. However, the big picture is very clear. As the price of gold rose in the beginning of the 2000s, so did investment demand for physical gold. Economic turmoil during the financial crisis of 2008 and later the European debt crisis in 2012 and 2013 undeniably accelerated the retail demand for physical gold. Lately the demand for gold bullion has levelled at roughly 1 100 tonnes per year with 2018 seeing a 26 per cent increase in demand for government minted gold coins while demand gold ETFs was down.

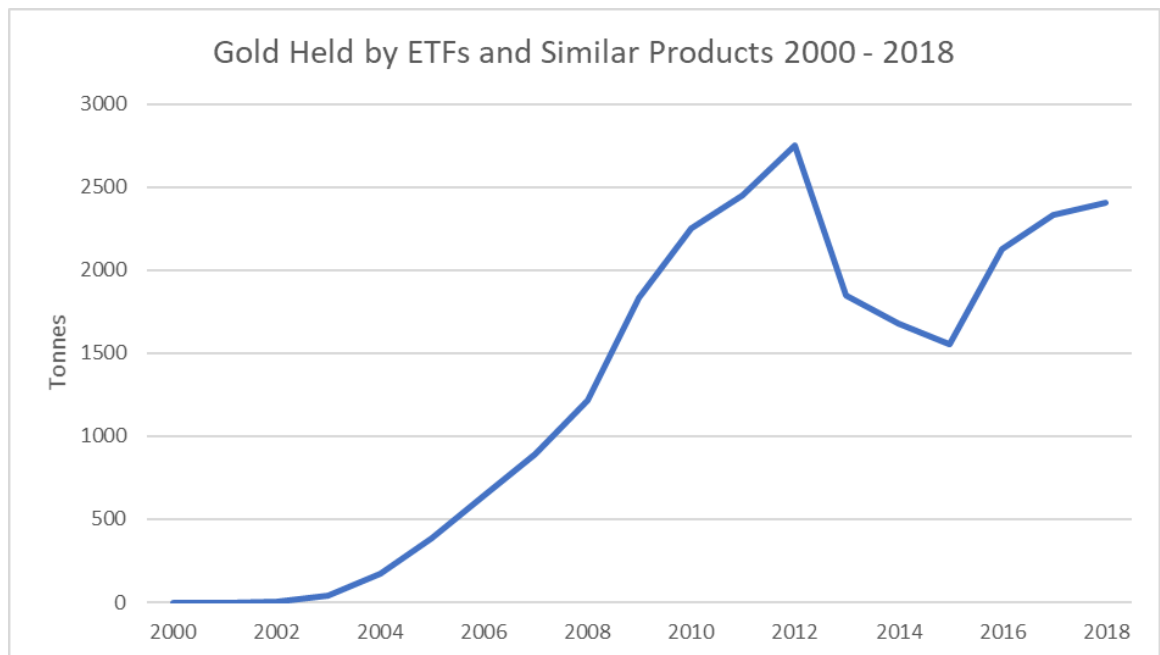


Chart 8. Gold held by ETFs and similar products (WGC 2012; WGC 2019a)

First physically backed gold ETFs were listed in 2002. Since then, and largely due to the general expansion of the Exchange Traded Fund market, demand for such products has soared. In December 2018, physically backed gold ETFs and similar products held roughly 2043,5 tonnes of physical gold in their holdings. Compared to physical retail bullion demand, the demand for ETFs reacted much faster to the 2013 severe decline in gold prices. Gold-backed EFT's saw their first outflow in assets under management in 2013 – over 900 tonnes of gold or in other words roughly 42 billion US dollars.

Gold is still commonly considered as a safe haven asset although few people have extensive knowledge on gold, its actual uses and the meaning of gold for the global economic sphere. In the interview, David Morgan pointed out that in the long-term economic stability and monetary policies are the main driver for gold prices (Morgan 6.12.2018). Morgan mentioned that over the past two decades, the intermediate-term driver for gold prices has been the “risk-on risk-off” nature of the financial markets meaning the threat of harm to the financial status quo (Morgan 6.12.2018).

Industrial Demand

In 2018 the technology sector accounted for roughly 7,7 per cent of the total gold demand totalling roughly 334,6 tonnes (WGC 2019a). As was discussed in chapter 3.3.1 gold is commonly used in the technology industry for plating microchips and processors due to gold's unique combination of low reactivity with other elements and high electrical conductivity. Gold is also used in dentistry although that segment consumed a mere 15,4 tonnes of gold in 2018 which was significantly less compared to the 45,6 tonnes nine years ago (WGC 2019a).

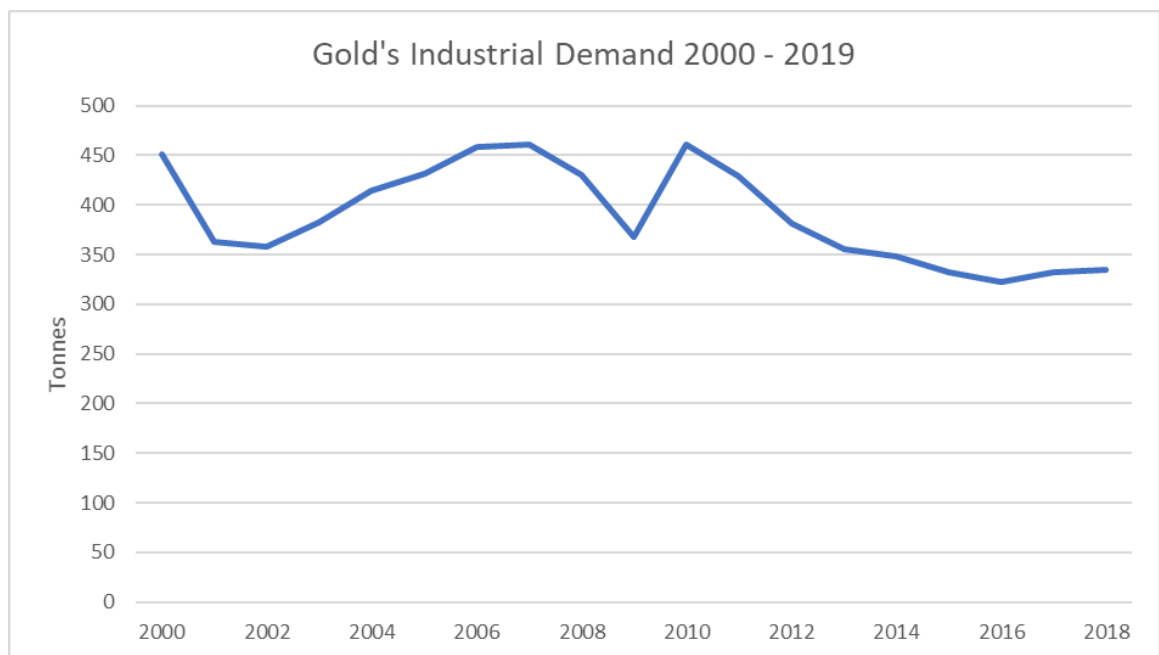


Chart 9. Gold's industrial demand (WGC 2012; WGC 2019a)

As with the investment demand, data in Chart 9 consists of two data series provided by the WGC and so the large increase in gold's industrial usage between 2009 and 2010 could simply be due to a change in data collection methods. The same reasoning applies to all charts based on WGC's data, but in industrial demand there is no apparent reason as to why the demand in 2010 would have increased so significantly as industrial demand had trended down for three years prior to 2010.

The longer trend in gold's industrial demand has been down throughout the 2000s, although over the last two years the industrial demand for gold has slightly increased year by year. The industrial demand for gold breaks down into three segments, which are technology, other industrial uses and dentistry. The technology demand trumps both of the latter

as technology demand consumed over 80 per cent of gold's total industrial demand in 2018. The 'other industrial uses' segment has also trended down significantly from 2010 when it consumed over 88 tonnes of gold opposed to 51 tonnes in 2018.

Central Bank Demand

According to government statistics combined by the World Gold Council, central banks and other similar institutions accounted for roughly 15 per cent of the physical gold demand in 2018 which was considerably more than previous year's 9,1 per cent. Total central bank demand was 651,5 tonnes in 2018 – an increase of more than 73 per cent year over year. Central banks purchased more gold in 2018 than during any single year since the US de-pegged the dollar from gold in 1971. As was noted in chapter 3.1.2 which discusses central bank gold holdings, many eastern central banks have been increasing their gold reserves over the past ten years and the trend is accelerating.

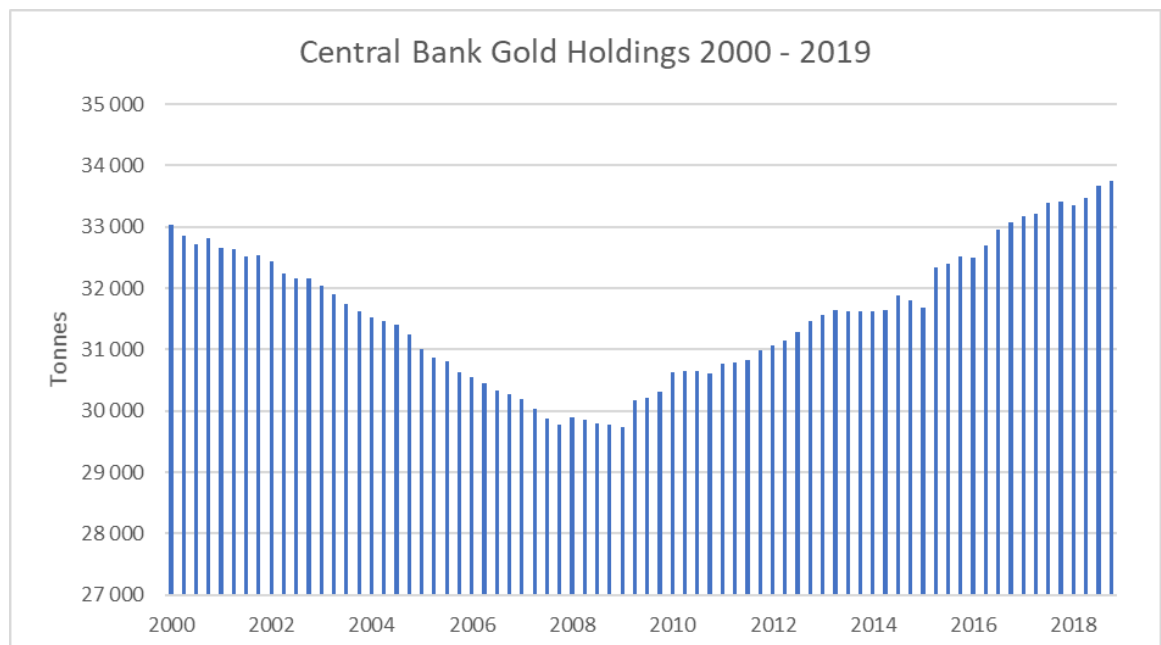


Chart 10. Quarterly data of gold reserves held by central banks (WGC 2019c)

Chart 10 presents the total amount of gold held by central banks around the world. As central banks are both gold buyers and sellers, the net change in the world's official central bank reserves does not equate to net change in demand. Some central banks are net sellers of gold whilst others are net buyers of gold. After the Bretton Woods system broke, central banks did not receive much attention in the gold space until the financial crisis of 2008 when central banks as a whole became net buyers of gold. The reasons behind the large central bank purchases are discussed in detail in the third scenario presented in chapter 4.3.

3.3.3 Gold Supply

On average, 75 per cent of gold's yearly supply comes from mining output. Since gold's demand tends to be higher than what the global mining output is, the rest of the demand is satisfied mainly by recycling including both jewellery and electronics recycling. It may come as a surprise to some, but 90 per cent of the recycled gold comes from jewellery recycling whilst just ten per cent is extracted from recycled electronic components. (WGC 2018h.)

David Morgan has over 40 years of trading experience in various financial markets and in addition, he is a globally well-known mining expert who is specialized in the precious metals mining industry. Due to his extraordinary knowledge on the industry, much of the content in this report concerning the mining segment of the gold market is based on his interview. This chapter examines the supply-side of the physical gold market with topics discussed including gold mining in figures, the lifecycle of a gold mine, largest gold mining companies, the junior gold mining industry as well as recycling of gold.

Gold Mining in Figures

As already mentioned, gold mining is the main source of yearly gold supply and accounts for roughly 75 per cent of total annual gold supply. Gold is being mined on every continent besides Antarctica and gold mining is currently not dominated by a single region although the difference between the most productive region, namely Africa, and the least productive region, namely Europe, is vast.

Table 3. Gold mining output by area (WGC 2018k)

Country	2012	2017	2017 %
Global Total	2937,0	3291,8	100,0 %
Africa	608,2	680,5	20,7 %
Asia	630,2	673,9	20,5 %
Central & South America	535,8	552,3	16,8 %
North America	448,4	537,2	16,3 %
Commonwealth of Independent States	368,9	459,1	13,9 %
Oceania	322,7	362,9	11,0 %
Europe	22,9	26,0	0,8 %

As can be seen from Table 3 based on data provided by the World Gold Council, gold mining output is distributed rather equally between different regions with the exception of Europe which accounted for less than one per cent of the total yearly output in 2017. The

Commonwealth of Independent States (CIS) is an organisation which consists of countries from the former Soviet Union including Armenia, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. This area is separated from the rest of the areas since a lot of the gold mining in this area is done in co-operation between the CIS countries. Most notably all regions have seen growth in mining output from 2012.

On country level and based on the World Gold Council's data, China was the largest producer in the world accounting for 429,4 tonnes or about 13 per cent of the yearly global gold mining output in 2017. Other large producers include Australia, Russia, United States, Canada, Peru and South Africa. (WGC 2018j.)

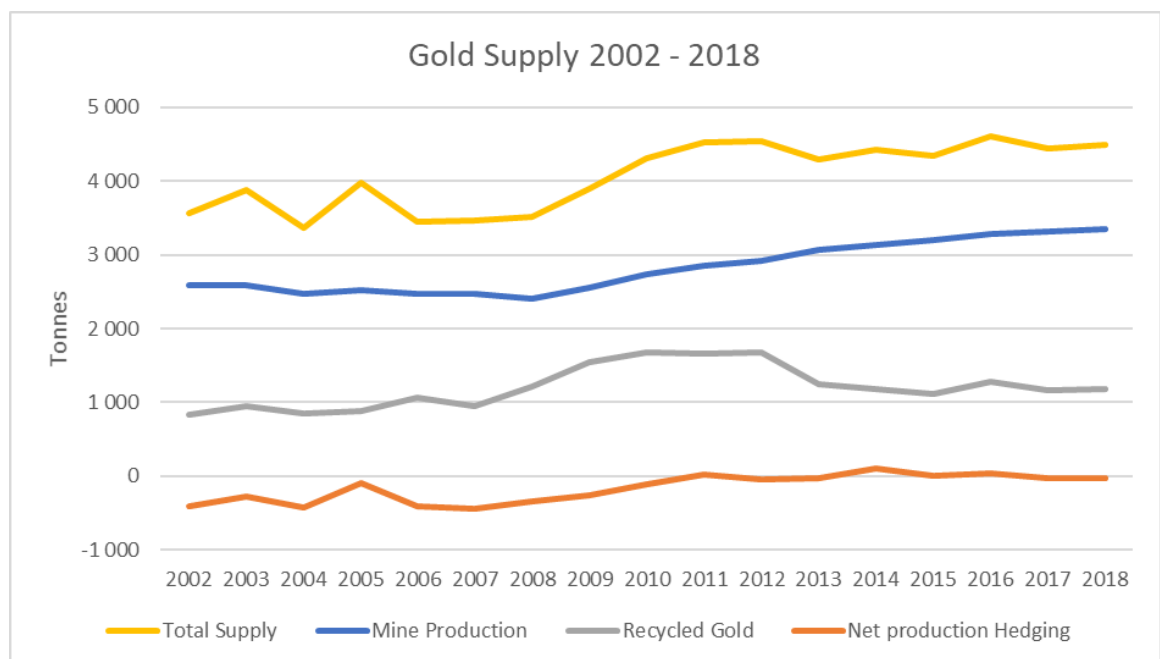


Chart 11. Yearly gold supply (WGC 2007; WGC 2010; WGC 2019a.)

As can be seen from Chart 11, gold mining output has been in an uptrend since 2008. An interesting trend has also emerged as miners were net long gold first in 2011 and then again from 2014 until 2016 after which hedging has remained low. By nature miners are always short the gold market, as they promise deliveries which they fill on a later date, but the price is set on the date of order. If a miner is net long gold it means that the miner has unsold gold in its inventory which in turn means that the miner is waiting for a better price to sell its product. This was the case in 2011 when gold prices were rising rapidly and again through 2014 until 2016 when the price of gold was in a bear market and the profitability of gold mines was severely impacted by falling prices.

Lifecycle of a Gold Mine

Gold mining can be divided into five stages which are exploration, development, operation, decommissioning and post-closure. On average the process of opening a new mine takes anywhere between 10 to 20 years. The first step in opening a new gold mine is exploration which is a time consuming and costly procedure which can take anywhere between one to ten years. According to the World Gold Council only about ten per cent of the global gold deposits have enough gold to be mined economically at these prices. (WGC 2018d; WGC 2018i.)

The second phase is the so-called development phase which can take on average up to five years from start to finish. In the development process companies acquire the necessary licenses for the excavation and setup the infrastructure to support the mines future operation. Infrastructure includes for example the mine itself, logistics around the mine as well as depending on the remoteness of the mine employee necessities. (WGC 2018c.)

The main phase of gold production is the operational phase which can continue anywhere from two year to over hundred years if there is enough gold to be mined profitably. Gold ore is mined from the ground, refined to low grade doré bars which contain between 60-90 per cent of the gold which is then shipped to refiners for further purification and refining. (WGC 2018l.)

The final phases of the mines decommissioning, and post-closure are tightly linked to each other. When the ore has run out the companies must reclaim the mining site to as close as possible to its original state. This includes for example filling the mining site and planting native flora. Mining companies are in addition, often required to post-monitor the flora and fauna of the old mining site as well as the effects of the mines closure on the local society. (WGC 2018b; WGC 2018m.)

As can be seen from the extensive processes required for opening new gold mines the mining output is slow to respond to sudden increases in demand and thus the global gold supply is very inelastic. Higher prices encourage mining companies to initiate exploration projects, but the actual output of newly mined gold can take up to 20 years from initiating. Increased demand drives prices up, which in turn encourages current owners of the metal to sell their ownings.

Largest Gold Mining Companies and The Health of The Industry

Only the top three largest mining companies in the world exceeded 100 tonnes in production in 2017. These companies were Barrick Gold at 171,6 tonnes, Newmont Mining at 163,3 tonnes and AngloGold Ashanti at 112,8 tonnes. In total these three companies accounted for 13,6 per cent of global gold mining output in 2017 whilst the top 10 mining companies accounted for 28,8 per cent of production at 949,4 tonnes. (Reuters 2019; WGC 2018k.) In this top 10 is included a partly state owned Uzbek company named Navoi Mining and Metallurgical Combiat which is estimated to have produced little over 75 tonnes of gold in 2017 although exact figures are not disclosed. Many countries like China and Russia have state owned mining companies which do not report their mining publicly and thus the top 10 companies, of which figures or reliable estimations are available, account for less than 30 per cent of the global gold mining.

Table 4. Top 9 gold mining companies by production (Reuters 2019)

Company	2017 Production (Metric tonnes)	Revenue (USD Billions)	AISC 2017 (/OZ)
Barrick Gold Corp	171,6	8,77	\$750
Newmont Mining Corp	163,3	7,11	\$924
AngloGold Ashanti Ltd	112,8	4,09	\$1054
Goldcorp Inc	89,4	3,52	\$825
Kinross Gold Corp	84,2	3,48	\$954
Newcrest Mining Ltd	76,7	3,52	\$836
Gold Fields Ltd	63,0	2,75	\$955
Polyus	61,2	2,70	\$621
Agnico Eagle Mines Ltd	51,7	2,21	\$804

Table 4 presents the top 9 largest gold miners by 2017 gold production. Navoi is estimated to be the seventh largest gold producer, but the company was excluded due to lacking disclosure from the company. As can be seen from the All In Sustaining Costs (AISC) all of the largest gold mining companies are profitable at current prices and the margins vary from less than 30 per cent to over 100 per cent. The average AISC weighted by production output for the top 9 gold mining companies comes to about 890 USD.

On a scale from 1 to 10 David Morgan would give a score of 5 or 6 for the overall health of the gold mining industry although Morgan noted that, despite the top miners are profitable, many miners are struggling at the current prices. (Morgan 6.12.2018). The trend of struggles can be easily noticed from the valuations of the companies in this sector as many

smaller gold mining companies have experienced bankruptcies whilst the remaining have been washed in valuation and market capitalisation.

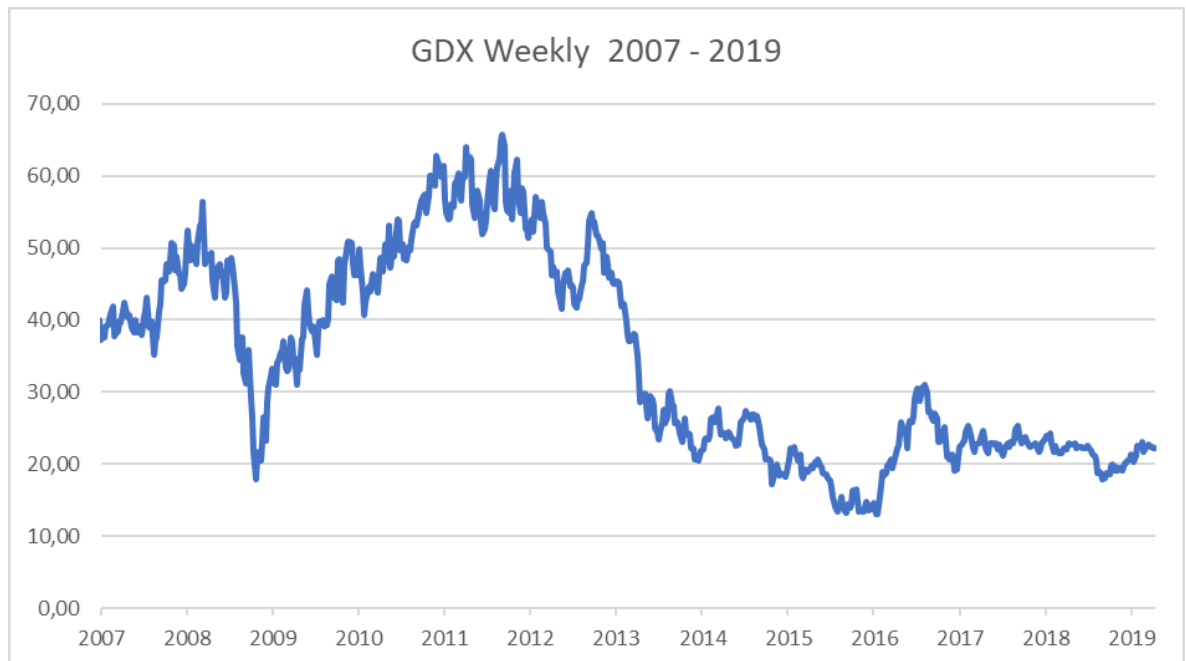


Chart 12. VanEck Vectors Gold Miners ETF (Investing 2019d)

The gold mining industry was badly hurt between 2011 and 2015 when the US dollar price of gold declined by more than 40 per cent from over 1 900 USD to little over 1 000 USD. During this period, the VanEck Vectors Gold Miners ETF (GDX) which follows an index composed of companies related to the gold mining sector, declined over 80 per cent from roughly 66,5 dollars to 12,5. As can be seen from Chart 12 the bear market in GDX between 2011 and 2015 was far more severe than the V-shaped bottom in 2008 which lasted for just a couple of years before GDX recovered its highs from early 2008. As of April 2019 the GDX is still more than 60 per cent from its 2011 highs.

In addition, to the decline in the price of gold stocks, the market has been hit with climbing exploration costs and lower ore grade. According to S&P Global Market Intelligence (SPGMI) roughly half of all funds spent in mineral exploration in 2017 were directed to gold exploration which amounts to little over four billion US dollars. For 2018 SPGMI estimated a 20 per cent rise in gold exploration budgets. (Mining News North 2018; Kitco 2018a.) Despite the increasing efforts to find gold, production grew with an average annual growth rate of mere 2,8 per cent between 2008 and 2018 (WGC 2019a). Whilst gold mining is attracting more capital as gold prices have rebounded from the 2015 lows the average ore grade has decayed severely.

A research report by Natural Resource Holdings (NRH) published in 2013 suggested that out of all gold mines, which potential underground reserves exceed one million ounces, the average ore grade was just 1,01 grams of gold per tonne. For the report NRH had researched a total of 580 known deposits and operational mines around the globe. Out of the 199 operational mines in the list, average ore grade was 1,18 grams of gold per tonne. (National Resource Holdings 2013.) Casey Research concluded in the same year that the median grade for the World's top 10 largest gold mines had fallen from 4,6 grams per tonne in 1998 to just 1,1 grams per tonne in 2012 (Casey Research 2013). In the interview, David Morgan cited that large companies are able to break even at about one gram per tonne (Morgan 6.12.2018) meaning that the situation has little changed from 2013.

It is estimated that there is about 57 000 metric tonnes of gold left in earth's unmined underground reserves (USGS 2019). It is important to note that currently mines can be profitable with as little as a gram of gold per tonne, but it is likely that in the future gold can be mined profitably at even lower concentrations due to technological advances. Easy access gold deposits are mostly being mined already and so mining is likely to become more difficult as access to some of the underground gold deposits require offshore deep water mining which remains an uncharted territory for the time being. With current demand, gold mining will have to become more efficient or gold prices will have to rise over the next 20 years since current technologies have limited reach. According to David Morgan it is possible that the world could run out of minable gold by 2039 if new technologies are not developed which in turn, he considered unlikely (Morgan 6.12.2018).

Trends in the Gold Mining Industry

Based on David Morgan's interview, there are two main trends developing in the overall mining industry which are likely to affect gold mining as well. These are namely robotics and energy. Morgan raised robotics the most significant trend for the precious metals mining industry, but Morgan also suggested that robotics will also be the largest challenge for the mining industry coming forward 20 years.

The positive aspect of robotics is that even though currently mining robots are expensive, as technology progresses the availability of mining robots will increase. Mining robots have lower maintenance costs compared to human workers and so Morgan estimated that robotics will lower cost of production in the long run. However, the displacement of people by robotics has a negative side to it. Morgan pointed out that although many of the junior miners are Canadian, most of their mining operations are conducted abroad in countries like Chile and Peru. This means that as robotics become more common, it will be harder to convince governments to issue mining rights to international companies seeking to

mine assets like gold from the ground while not employing the local people. Morgan sees this as a major issue for companies seeking to conduct mining outside their home countries with robotics. (Morgan 6.12.2018.)

The second challenge Morgan mentioned was energy. He sees that the cost of energy is going to increase dramatically over the next twenty years and as mining and in particular transportation is energy intense the cost of energy and more specifically oil and diesel has a direct impact on the profitability of mining companies. Morgan noted that he does not see a big enough breakthrough in the transportation sector – a good replacement for oil and diesel – which could lessen the importance of energy in the mining sector and so the rise in oil prices will most likely have a big impact on gold mining. (Morgan 6.12.2018.)

Although more forms of renewable energy are developed continuously and the rate of change in the technology industry is immense Morgan stated that he is not convinced as of now that the heavy-duty transportation industry will bypass oil in the next few decades (Morgan 6.12.2018). Without going into further detail on the oil market, the rationale behind the energy issue is that oil exploration has been trending down for the past ten years amid falling oil prices. At the same time it is estimated that without further investments, global oil production will fall by half by 2025. It is practically an impossibility for oil consumption to fall in half during the same time period which means that oil prices must rise in order to stimulate investments towards oil exploration. (CleanTechnica 2018.) Due to the energy issue, some of the potential gold deposits which would be economical to mine at current costs may become uneconomical in the future if gold prices remain stagnant.

Gold Recycling

As already mentioned, recycling is the second largest form of supply in the gold market covering roughly 25 per cent of yearly gold supply. Compared to mining, recycling is much more responsive to changes in gold price and economic conditions. People tend to recycle more gold when price is rising whilst recycling activity falls when prices decline. Also during economic distress people are in need of cash and thus they resolve to selling their gold jewellery. The correlation between gold's price and recycling activity is well illustrated in Chart 13 below.

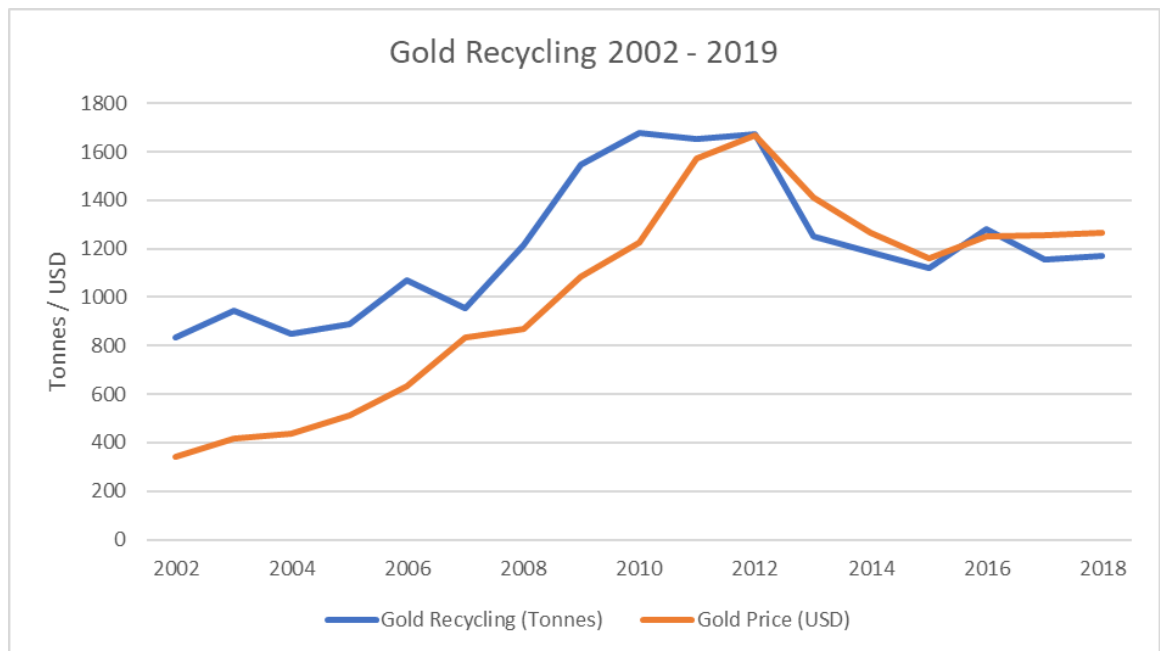


Chart 13. Gold's recycling activity in relation to price of gold in US dollars (WGC 2007; WGC 2010; WGC 2019a)

Almost 90 per cent of all gold recycling comes from jewellery whilst the rest comes from electronics recycling although the share of electronic recycling is likely to grow extensively over the next decades. Since the consumption of electronics around the world has increased dramatically over the past 30 years, a new segment called e-waste (electronical waste) gold mining has emerged. In the interview, Morgan pointed out that for example a ton of smart phones could yield four grams of gold per tonne which is about four times the amount which some of the largest gold miners are currently mining (Morgan 6.12.2018). An Australian professor Veena Sahajwalla has researched the topic and noted that a ton of e-waste could potentially yield up to 350 grams of gold per tonne (BBC 2018).

As long as there is jewellery demand there will be recycling of jewellery. Jewellery demand consumes more than six times the amount gold relative to industrial demand. Therefore jewellery recycling will remain as a core source of recycled gold. Based on the promising results in e-waste recycling and the amount of gold being consumed by the technology industry these e-waste mining companies could potentially become some of the world's largest gold producers over the next two decades. E-waste mining will come into the market, but although there is huge potential the segment remains limited when compared to the vast size of the whole market. The amount of gold recycled from e-waste cannot outpace the amount of gold used by the technology industry in the long run.

Junior Mining Industry

The term junior miner refers to a mining company which is yet to start mining production. Companies in the junior mining industry are mostly explorers meaning that the companies are seeking for new metal deposits which could be turned into profitable mines. Junior mining companies have negative cash flow and are financed primarily via share offerings. In the interview, David Morgan pointed out that the junior mining industry is a crucial part of the gold mining industry at large as these companies are responsible of finding new deposits across the world and thus without gold exploration the whole gold mining industry would stagnate (Morgan 6.12.2018).

The classic model for a junior mining company is to raise capital via a private placement after which the fresh company will list to a venture type stock exchange in order to raise more capital. After sufficient capital has been raised the company will go to the pre-examined location and do test drills to further examine the area's mining potential. The whole process is capital intense, and Morgan pointed out that only one in four thousand junior miners becomes an actual operational gold mine (Morgan 6.12.2018). It is safe to say that the current discovery models used by the gold mining industry are relatively inefficient considering the effort put into gold exploration.

In the interview, Morgan said that the gold exploration business has been relatively uncreative in finding new ways to search for gold. Although difficult by nature, finding gold has seen little improvement over the past few decades, and relative to the technology industry, progress has been minimal. The exploration sector could use more creativity, but the falling price of gold ever since 2011 has not inspired people to join the gold mining sector in masses.

3.4 Why Financial Markets Are Inefficient

The academic community often examines the financial markets as if they were efficient. Although market efficiency is a century old theory, it was the Nobel prize winning American economist Eugene Francis Fama who took up the theory for examination in the 1960s. After studying the subject for several years and publishing the random walk hypothesis Fama published a paper titled Efficient Capital Markets: A Review of Theory and Empirical Work in 1970 which was published by The Journal of Finance. Nowadays the Efficient Market Hypothesis is widely accepted norm and the baseline in most valuation calculations used in finance around the world.

Despite endorsed and widely accepted the Efficient Market Hypothesis (EMH) is flawed with many false assumptions and conclusions. For the reader to understand the rationale behind the market analysis part of this report the reader must understand that financial markets are inefficient in practice and that the market prices of assets are often based on irrational actions rather than rational decision making. Market manipulation is a major contributor to the inefficiency of the markets and in the case of gold markets market manipulation is so significant that it will be discussed separately in chapter 3.5. This chapter discusses the problems in the efficient market hypothesis and examines the markets from the market participant perspective.

3.4.1 The Efficient Market Hypothesis

In essence the efficient market hypothesis states that in an efficient market environment overperforming the broader market, such as a stock market index, is impossible because asset prices reflect all available information and thus are accurately priced at all times. According to the theory the only way to earn higher returns compared to an index is by taking higher risk. Fama argued that there are three levels of market efficiency which are strong, semi-strong and weak efficiency. (Fama 1970.)

Weak form efficiency states that future prices cannot be predicted by analysing price action data available and that future prices are random and do not express patterns, meaning that technical analysis for example is completely useless. The weak form does not rule out the possibility of overperforming the market via certain type of fundamental analysis. The weak form suggests that historical prices do not contain information which could be used to make consistently oversized profits in the future. Therefore prices do not need to be at equilibrium at all times since there is no way to profit from the mispricing. (Fama 1970.)

The semi-strong form efficiency adds publicly available data to the weak form. The semi-strong efficiency suggests that all publicly available data is rapidly reflected into the prices of securities once made public. This effect can be easily seen when examining the relationship between historical prices and economic data releases. (Fama 1970.) A simple example of this adjustment in prices can be seen when companies release quarterly reports. If a report is worse than what the market had expected share prices should fall and vice versa. The strong form efficiency takes a step further by stating that in order for markets to reflect strong form of efficiency all information should be available to all market participants at all times and thus insider trading could not be profited from (Fama 1970).

Since we know from past cases that insider trading happens from time to time and it is impossible to verify that insider trading would be non-existent at all times financial markets are commonly viewed to reflect a semi-strong-form of efficiency. This assumes that publicly available information is rapidly reflected in the prices of securities and thus it is impossible to overperform the market consistently over time.

However, the semi-strong form efficiency has some major problems one of which is that not all publicly available data is freely available. Large investors and traders, such as pension funds, investment banks and hedge funds, may use millions of dollars per year for premium content, data and analysis services which track all possible data points related to the underlying asset. This issue is addressed in the lesser known Grossman-Stiglitz paradox which makes a case that since public available information is not always freely available to all market participants, the financial markets cannot be efficient as the markets are unable to determine the true intrinsic value of the underlying asset such as a listed share.

The efficient market hypothesis also assumes that human decision making is rational and almost robotic at all times whilst the reality is very different. Traders and investors are often subject to emotions in their decision making which makes their actions irrational. Irrational decision making can be easily perceived in bubbles and recessions. Humans are subject to a so called recency bias which makes humans extrapolate past performance into the future. Recency bias is the root behind irrational behaviour which can be seen in bubbles where the consensus is that prices can only rise and in recessions where every bit of news is seen sour. Market sentiment is further discussed in chapter 3.6.1.

Unequal distribution of information, emotions and recency bias are not the only factors eroding the foundation behind EMH. Ignorance of market participants is also a major issue which relates to both of the previous factors. It is absurd to suggest that an ordinary private investor or even a multimillion-dollar fund manager would be aware of all market aspects of a major corporation let alone the related markets of the corporation including all currencies and commodities in which the company is involved in. At best the market participants act based on their best knowledge and at worst these market participants indicate clear crowd behaviour and so called gut feeling based decision making where decisions are based on irrelevant stimulus such as a single news headline or merely a fancy commercial. Market participant imperfections make the market already inefficient.

Subjectivity is also a major hurdle for EMH as information and future guidance provided by the company, government entity or a central bank can and often is viewed and valued differently depending on the person who is performing the analysis. This is why target prices

from stock analysts differ from each other and the market price is rarely in line with the analysts once new information on the company is made publicly available. A person such as a stock analyst who knows virtually everything on the company should always have a target price which is in line with the stocks market price in the case that he has all the publicly available data and the market is subject to semi-strong efficiency.

An even more disturbing fact is the reliability of the economic data. History is filled with false information published by companies and even government regulated entities. Most recently CNN reported in late January 2019 that over 40 per cent of Japan's 56 economic policies had errors in the ways how the data is measured (CNN 2019). CNN went to the extent to call the data "faked" which suggests intentional fabrication of the data released. Whether Japan's case was purely a human mistake or some government effort to make Japan's economy look stronger in the eyes of investors and the public the reason for the misleading data will most likely remain unsolved. Since the accuracy of data from some of the most reliable sources in the world such as government entities cannot be fully trusted the idea that publicly available data would be trustworthy should be questioned.

It is common to hear from the supporters of the EMH that markets are 'efficient enough' not to make oversized returns over a long period of time. This often acts as a disclaimer to why bubbles happen which are pinnacles of irrational human behaviour and why there are hedge funds which have returned over 20 per cent annualised for decades. The 'efficient enough' argument conflicts with the whole EMH since it opens the possibility to quantifiably examine history for patterns which are sure to emerge over time as humans commit the same mistakes as they always seem to commit – in for example bubbles. It is not even reasonable to think considering all the points presented that these patterns would be limited to bubbles. The patterns are likely to be found elsewhere as well making the possibility of profiting from the patterns more consistent.

3.4.2 Financial Markets in Reality

Whilst reading academic research is a good way to understand concepts and theories these reports often lack the perspective and the first-hand experience of market participants who in reality make the market – investors, traders and market makers. Therefore, it is important not to get carried away with theories and to also examine the experiences of these market participants. For this purpose Gary Savage, Alexis Stenfors, David Brady, Brent Johnson and David Morgan, all of whom have multiple years of experience in trading and analysing various markets, were interviewed in the making of this report. Out of all the interviewees Alexis Stenfors has arguably the deepest knowledge on the functions of

markets having personally spent over a decade working on trading floors of investment banks and having studied market manipulation for many years after his career as a trader.

Alexis Stenfors has done a remarkable career as an investment bank front office trader working as a currency and interest rate derivatives market maker for HSBC, Citi Bank, Crédit Agricole and Merrill Lynch for 15 year. In his latest book called *Barometer of Fear: An Insider's Account of Rogue Trading and the Greatest Banking Scandal in History* (henceforth referred to as 'the Barometer of Fear') Stenfors discusses his career as a trader, the Libor scandal of 2012 as well as the mindset and the customs of some investment bank traders. (Stenfors 2017.)

The *Barometer of Fear* discusses some key elements why financial markets cannot be efficient although Stenfors does not state this directly as that is not the main topic of the book. For an example, Stenfors stated that in any currency pair 80 per cent of the market could be fitted into a single conference room. Also in a standard questionnaire sent by the European Central Bank (ECB) to traders in hundreds of European banks, the traders were asked whether they viewed the money markets to be efficient. In 2005, over 80 per cent of responders had answered to view the money markets either as 'significantly efficient' or 'extremely efficient' whilst in 2013 the figure had dropped to less than one per cent of responders as a result of the financial crisis of 2008 and the Eurozone crisis. (Stenfors 2017.)

In the interview, Stenfors said that as with most of his peers he rarely had positions with timespans of over two weeks or so. In the book Stenfors wrote that from time to time the actions of traders were irrational and even indefensible. In one instance Stenfors recalls a trader being dismissed after urinating on an important client. Stenfors also noted that most 'incidents' were hushed up without consequences as long as the trader was making money for the bank. Stenfors also remarks that conspiring between traders can take place in mostly uncontrollable places such as on the desk, during a dinner, a seminar or even a cigarette break. (Stenfors 21.11.2018; Stenfors 2017.)

Furthermore, in the interview, Stenfors mentioned that he has never met a single trader who would be a subscriber of the Efficient Market Hypothesis. When asked about the Efficient Market Hypothesis Stenfors noted that from his point of view "Financial market prices are outcomes that are determined and or influenced by psychological and sociological phenomena, which are infinitely more complex than postulated in the EMH [Efficient Market Hypothesis]". (Stenfors 21.11.2018.)

Stenfors' experiences are based on the foreign exchange and interest rate derivatives markets which as a group are some of the largest markets in the world. While not a one hundred per cent the same issues are most likely present on other markets such as stocks, bonds and commodities markets including the gold market. If 80 per cent of a market is in the hands of so few, the culture of these traders being mostly short sighted and with the fact that the people who effectively make the market do not consider the market efficient it would be absurd to consider such market as efficient.

Common thoughts amongst the interviewees were that ultimately the free markets will overcome manipulation and severe mispricings will force the markets into equilibrium yet in the meanwhile markets remain inefficient. Inefficiencies in the markets enable overperformance which is the ultimate goal of trading. It is important to note that the interviewees have decades of experience in various financial markets and that they are unlikely to be alone with their opinions. Although not in the same league as Stenfors in terms of trade volumes these interviewees represent the 20 per cent of the market which do not fit into the conference room – the majority of traders. Most of the actual market participants do not believe in efficient markets and thus their decision making progress often assumes that markets are inefficient.

As the Efficient Market Hypothesis states financial markets do react to new information quickly as if the market is pricing in new information almost instantaneously. The reactions to for example US crude oil inventory, consumer price index or other economic data releases are nowadays faster than what humans are able to react and sometimes markets see large multi percentage point moves in a matter of seconds. The reason for this is that currently most trading in the financial markets is computer driven algorithmic trading.

Marko Kolanovic, global head of quantitative and derivatives research at JPMorgan, estimated in a note to clients in 2017 that the majority of market participant in the equity markets do not make investment decisions on stocks based on the fundamentals of the given stock. JPMorgan research also suggested that human transactions represent less than ten per cent of developed financial markets such as the US stock market. (CNBC 2017.)

Algorithms are used on virtually all financial markets from commodities to currencies and stocks. One of the ways to utilize algorithms is to let computers go through large amounts of information such as earnings reports or economic press releases from long periods of time and make investment decisions based on this information. Another way to utilize algorithms is to program so called trend following algorithms which aim to determine technical trends in the markets and trade accordingly. Again based on the assumption made

by the weak form of efficiency oversized returns should not be possible by simply examining the historical price action. Yet, trend following algorithms do exist and are used by some of the most successful hedge funds which consistently overperform the markets.

The last major utilization of algorithmic trading is to react to new information quicker than other market participants and thus gain an advantage over the rest of the market and make a small profit from doing so. Small in the context of potentially millions of US dollars in a matter of seconds. This type of algorithmic trading causes the violent reactions to news events and data releases mentioned before. While a statement can be made that algorithms are making the markets more efficient by enabling price discovery to take place in a matter of seconds an opposing view can also be addressed with the help of previously discussed information about market inefficiency and human decision making.

Algorithms, while objective and rational in their actions are however, programmed by humans who are biased and can act irrationally. Algorithms have for example caused flash crashes where the algorithm overwhelms the sell side of the market causing prices to drop close to zero in a matter of seconds. Although famous cases of flash crashes like the ones in the US stock market back in 2010 and 2015 are always big news, flash crashes are more common than most traders think. According to algorithm trading provider Pragma, small flash crashes happen in large currency pairs once every two weeks (Reuters 2017a).

The flash crashes are an issue linked to High Frequency Trading (HFT). In essence HFT is trading in which positions are opened and closed intra second – sometimes as quickly as in the matter of microseconds. HFT enables, amongst other, frontrunning which means trading conducted by a third party company or the broker who receives an order from a client so that the HFT trading takes place between the time an actual order is placed by the client and the execution of that order in the market – the exchange server. In frontrunning the HFT participant buys or sells the instrument before the client's order is routed to the exchange and passes the purchased or sold instrument to the client who ends up paying a slightly higher price for the instrument in question. The HFT participant makes a risk-free profit as long as it is able to act before the actual order reaches the exchange's server. While not all HFT trading is frontrunning, positions taken in HFT are opened and closed intra second and thus are not based on stock specific fundamentals. It is also estimated that HFT makes up over 50 per cent of all trading volume in the US stock market (Business Insider 2017).

3.4.3 Conclusion on Market Efficiency

While simplistic and rational at first sight the strong, semi-strong and even the weak forms of the EMH are all utopia. Even the largest players on the markets are speculative and to some extent emotionally unstable by nature rather than rational and unemotional with long-term fundamental perspective. Speculative high frequency trading, frontrunning and automated trend following strategies further corrupt the markets and extend as well as amplify trends in selloffs further feeding mass panics and emotional trading. With such conditions it would be an impossibility for markets to function fully rationally at all times just by chance which in turn means that mispricing of assets happens constantly.

With so many moving parts, the current financial markets resemble a dynamic and complex system which has elements of chaos theory imbedded within. Market participants in all categories from professional money managers and investment bank traders to amateur investors and day traders are all subject to emotions and biased opinions. Bubbles, flash crashes and algorithm extended selloffs are just some of the quirks of inefficient markets.

A good example of a recent bubble behaviour is the hype around cannabis stocks which propelled some companies such as Tilray to absurd valuations excess of 700 times per sales while an average P/S in the currently somewhat extended US stock market is just above two. Even large tech firms like Facebook, Alphabet, Apple and Amazon all of which have elevated future expectations priced into their valuations traded below ten times their sales as of March 2019.

The current Modern Monetary Theory (MMT) models are based on a flawed understanding of the financial markets and are seriously outdated considering the complexity and emotional nature of the financial markets. With the overwhelming evidence suggesting that financial markets are inefficient it goes to the lengths of absurdity that educational institutions such as universities remain to teach finance and economics students theories based on the assumption of efficient markets. In reality financial markets are to be considered inefficient with the tendency to find equilibrium over extremely long periods of time.

It is crucial for the reader to acknowledge the inefficient nature of markets even when talking about years and decades of mispricing. Understanding of this enables the reader to grasp the potential opportunities presented currently in the gold market. While there are opportunities to be seen there are also many risk factors which are further examined in each of the scenarios presented in the market analysis segment of the report. One of the

obstacles and a further contributing factor for market inefficiency is market manipulation which is examined in detail in the next chapter.

3.5 Gold Market Manipulation

As explained in the previous chapter, financial markets are to be concerned inefficient due to unevenly distributed information, insider trading and skewed trade volume. Although comprehensive enough to criticize the whole concept of efficient markets, humans also take direct actions which erode the concept of efficient markets. Traders manipulate the markets. There have been numerous market manipulation cases concerning various gold markets which corrupts the efficiency and the integrity of the gold market even further.

Almost all of the experts interviewed for this report perceived the gold market as highly manipulated. Anonymous sources who have experience from multiple investment banks including HSBC, ICBC and Barkley's stated that all of the major precious metals traders know each other in the City of London. The comment is supportive to Stenfors' statement made in his book where he wrote that the clear majority of markets is formed by few individual investment bank traders and that the members of these communities are often very tightly in touch with each other. Based on the anonymous sources this is true even more so in the precious metals market.

Based on discussions with anonymous sources who have worked together with precious metals traders in large investment banks the traders know each other very well. The sources suggested that gold traders in large investment banks have either a direct or indirect access to both London Loco and COMEX futures. Indirect access meaning that they are in close relations with a trading department in the same bank executing COMEX trades whilst they have direct access to Loco or vice versa. This raises a question of market integrity as the Loco is nonregulated and opaque and thus trader supervision falls to internal control in the bank itself more of which is discussed in the following chapters.

This chapter examines previous precious metals market manipulation cases, the current situation in the gold futures market, futures position limit enforcement as well as the conclusion to the integrity of the gold derivatives markets.

3.5.1 Previous Cases

This chapter examines some of the gold market manipulation cases which have been publicised. Previously investment banks have been fined upwards of 60 million US dollars

from precious metals market manipulation. For the banks, multimillion-dollar lawsuit settlements are not a serious problem. At most, a 60 million dollar lawsuit settlement will make a small dent to the bank's yearly profits report. Relatively small fines like these do not serve the purpose of punishing these large investment banks. The fines serve a better purpose of revealing the faults in the system which can then be avoided. Either these improvements will be used to actually improve the integrity of the system or the exact opposite.

Take for example The Hongkong and Shanghai Banking Corporation (HSBC). HSBC's yearly adjusted pre-tax profit was approximately 21 billion US dollars, with yearly adjusted revenue exceeding 51 billion dollars in 2017 (HSBC 2018). In 2017, HSBC was fined 175 million US dollars by the US Federal Reserve for foreign exchange market manipulation which took place between 2008 and 2013 (Reuters 2017b). The fine may sound like a large figure but compared to the adjusted pre-tax profit of 21 billion dollars the fine cuts the profit by less than nine per cent. Considering that, in this case, the manipulation was carried on for five years and if the manipulation had been profitable enough for HSBC, they could take a lesson from the time they got caught and carry on with a new approach.

When it comes to gold, manipulation cases do not limit to investment banks. Even government agencies have manipulated precious metals markets in the past. For example, the London Gold Pool was originally created to prevent the price of gold from rising over the official exchange rate dictated by the Bretton Woods agreement (WGC 2018n). Many of the interviewees also suggested that central banks are still manipulating the precious metals markets in order to control inflation by suppressing the price of gold and so affecting the whole commodity market and thus producer prices. The following subchapters examine some of the recorded cases of gold market manipulation.

J.P. Morgan 2018

One of the most recent cases of precious metals market manipulation was uncovered in early November of 2018 when a J.P. Morgan precious metals trader plead guilty for precious metals market manipulation which took place between 2009 and 2015. The trader admitted that he along with his colleagues at J.P. Morgan had spoofed the gold, silver, palladium and platinum futures markets. (CNBC 2018b.) Spoofing is a rather common form of market manipulation in which traders place large mala fide orders to the market which are cancelled before execution. This is done to affect the actual market prices by letting the rest of the market think that there is either a large buyer or seller willing to take action. This often causes the price to move in the opposite direction relative to the orders

which allows the manipulator to take advantage of the momentary mispricing which creates a more favourable setting for the trader's intended entry.

In this particular case, the J.P. Morgan trader admitted having manipulated the US precious metals futures markets from 2009 throughout 2015 and that he had learned the manipulate practices from a senior trader and that his supervisors were aware of the manipulation (CNBC 2018b). This suggests that the same form of manipulation is likely to have been conducted also prior to 2009. The trader's confession also shows the moral hazard present in these large investment banks as supervisors are willing to look the other way. It also goes to show that even though the manipulation was most likely visible to other market participants and the exchange, internal supervision still plays a key role in investment banks. If internal supervision is fraudulent then the markets are easy to abuse.

One thing which jumps out, in this case, is the potential penalty which the trader in question faces. According to the CNBC article, the trader could face up to 30 years of imprisonment although this would be an extreme penalty (CNBC 2018b). Judging by previous penalties issued from gold market manipulation, fixing and spoofing cases the trader is unlikely to actually serve prison time. The most likely consequence is that J.P. Morgan pays fines for the manipulation and some trade restrictions could be applied to the people in question. Whilst this particular case remains unsolved, it is unlikely that this will end up being the last precious metals market manipulation case for J.P. Morgan.

Deutsche Bank & Many Others 2016

One of the largest precious metals market manipulation cases, and arguably the best known, brought to daylight was settled in early 2016 when Deutsche Bank agreed to pay 60 million US dollars to settle a large-scale gold fixing case. In this instance, Deutsche Bank along with Barkleys, Bank of Nova Scotia, HSBC and Societe Generale was accused of manipulating the gold market between 2003 and 2013. Deutsche agreed on the 60 million US dollar although the bank denied wrongdoing. In 2015, Deutsche Bank agreed on a 38 million dollar settlement over a similar silver market manipulation case. (Reuters 2016.)

Gold Charts R Us has gathered a thorough archive related to this specific case. The archives contain documents related to the case which reveal that banks were accused of spoofing, frontrunning, wash sales and jamming. Frontrunning was briefly addressed in chapter 3.4.2 but in essence it means trading in own positions ahead of executing an order from a client in order to get in and out before the market moves as a result of the client's order. Wash sales mean trades which are executed but then quickly reversed and

jamming means pushing the market by triggering stop losses in order to profit from writing options or similar products expiring worthless due to jamming. (Gold Charts R Us 2019.)

In the archives, there are some of the conversations between traders in different banks. Traders reportedly used phrases such as “cant wait for another day when we get the bulldozer out the garage on gold or sil, they are my first port of call hahahahahah” and “everyone shrt into the fix i swear it’s the only time ppl trade” in their communication. One discussion between a trader from Deutsche Bank and a trader from UBS reads: Deutsche “bro japan holiday today. think it’ll be quiet. well, illiquid, not quiet haha. illiquid means wild wild west”, UBS “okay when gold pops 1430. we whack it. u sell your 50k. i sell my 20k. then we double that up and produce our on liquidity too. that should be enough to cap it on a holiday” Deutsche “haha yeah. lol”. (Gold Charts R Us 2019). In the conversation traders most likely discussed 50 and 20 thousand gold futures contracts, which would have nominal values of 7,15 and 2,86 billion US dollars at 1 430 dollar gold.

Comments like these may seem preposterous to people who have not been dealing with traders but to the ears of frequent market participants, such gloating comments are not out of the ordinary. Unfortunately, in this case, the comments were made by traders who had multi-million or billion dollar trade books backing their trading and enabling them to manipulate the precious metals markets for a decade. Such systematic manipulation jeopardises the efficient functioning of the financial markets in the short and intermediate-term.

3.5.2 Current Situation

This chapter presents a potential case of gold market manipulation which is yet to be disclosed by the CFTC. The facts presented are empirical facts based on market screening and historical data. This chapter is by no means an offensive approach towards any single market participant nor is it foolproof evidence of an ongoing market cartel which aims to suppress the price of gold. This chapter is merely an observation.

According to a CNBC article published on 13th of November the number of cases of market manipulation, attempted manipulation, false reporting, spoofing or deceptive conduct which have been brought up by the Commodity Futures Trading Commission has more than doubled in less than a year and has risen over six-folds since 2016 (CNBC 2018c). Even though the rising figures seem encouraging due to the fact that regulators are taking action it is important to remember that the cases brought forward are based on historical evidence which means that the damage has been already done and the actions taken are reactive instead of proactive.

As was discussed in the previous chapter, gold market manipulation can take place in various markets. However, OTC market manipulation remains harder to track due to the opaque nature of the market as positions are rarely disclosed outside the absolute necessity which often limits to the two parties included in the deal. Because the data is restricted it would be overwhelmingly difficult if not completely impossible to discuss the current situation of the OTC gold market as even regulators do not always possess the data. It is more reasonable to examine the situation of a slightly less opaque market – the Commodity Exchange division of the New York Mercantile Exchange also known as COMEX.

Although the fact that COMEX has been manipulated is not new, Gary Savage was the first to notice peculiar dumps in COMEX gold futures during the premarket sessions. Savage has numerous times pointed out in his premium newsletter that from time to time ever since 2017 gold and silver futures witness intense volume a few hours prior to the US stock market open and the beginning of the liquid trading hours in the futures. The heavy volume causes the price of both gold and silver to fall prior to the US market open. (SMT Blog 2018.) In other words, there seems to be some entity which aims to suppress the price of gold by pushing the market with heavy selling pressure in the premarket during illiquid trading hours. The following subchapters discuss these (in lack of a better word) “attacks” by examining the price action around the attacks, the regulation which should prevent such behaviour and the potential market participants conducting the attacks. Once again it is noteworthy that these observations are just observations.

Dumps in COMEX

Over the past two years, there has been a trend of large volume spikes in COMEX gold and silver futures during illiquid trading hours which has led to a severe decline in the price of those futures. The spikes are hard to go unnoticed when examining the volume histogram of precious metals futures markets. The following charts are screenshots from the Interactive Broker’s Trader Workstation. For larger pictures see Appendix 2.



Chart 14. 5 second candle COMEX gold futures 07:00-09:20 on 15.6.2018 (IB 2019)



Chart 15. 5 second candle COMEX gold futures 06:00-08:20 on 16.5.2018 (IB 2019)



Chart 16. 5 second candle COMEX gold futures 08:00-10:20 on 17.7.2018 (IB 2019)

As can be seen from the charts above, there have been numerous occasions where gold futures have a sudden spike in volume during premarket hours. These are just some of the cases but in total there have been at least 21 occasions since the beginning of 2017 when the price of gold has been suppressed with heavy volume in premarket resulting in further losses. While large transactions are not out of the ordinary, not a single reasonable trader with multi thousand futures contract position would sell that position during illiquid trading hours unless they would have the intention of driving the price down.

One of the largest volume spikes occurred on 15 of June 2018 when the August 2018 gold futures contract volume reached over 114 000 contracts in just two hours during pre-market. The largest 5 second volume during the event was reached at 09:09:40 when the futures traded a total of 4 500 contracts, equivalent to 1,18 per cent of average daily volume. As a result to the premarket attack, the selling pressure continued during the regular trading hours and the whole occasion brought the price of the August gold futures contract from 1 303,40 USD down to 1 277,90 USD in six hours slashing a major pivot point at 1 286,80 USD and creating a breakdown from a 22 trading day consolidation zone.



Chart 17. 5 second candle COMEX gold futures 09:00-09:20 on 15.6.2018 (IB 2019)



Chart 18. 15 second candle COMEX gold futures 07:20-13:30 on 15.6.2018 (IB 2019)

Regular trading hours are also often referred to as 'liquid hours' since this is the time period when US stock markets are open and global trading activity reaches its daily peak. Therefore, it makes logical sense for institutional investors with large positions to conduct most of their trading activities during liquid hours when large orders have little impact on the market price. The spikes outside regular trading hours are against this concept. Without the transaction logs from the futures exchange it is impossible to pinpoint the sellers at these spikes. What can be said is that it is highly likely that if exactly 4 500 contracts,

equal to over 580 million dollars in nominal value, trade in a 5 second period these large orders are most likely submitted by a single large institutional trader.

Ironically the CME Group came out with an article in June 2018 headlined “Liquidity of COMEX Gold & Silver is Excellent”. More specifically the article stated that the liquidity in the gold and silver futures contracts has been excellent during Asian trading hours which were defined as 08:00 to 20:00 Singapore time which translates to 20:00 to 08:00 EDT (New York during spring/summer) and 19:00 to 07:00 EST (New York during autumn/winter). (CME Group 2018a.) Even though the daily liquidity of the gold futures market might be sufficient to withstand a multi thousand contract sell order if distributed evenly, the Asian trading hours are most definitely not liquid enough to withstand such orders at once.

Rationale and Market Participants

Anonymous sources suggested that gold traders in large investment banks have either a direct or indirect access to both London Loco and COMEX futures. Indirect access meaning that they are in close relations with a trading department in the same bank executing COMEX trades whilst they have direct access to Loco or vice versa. This raises a question of market integrity as the Loco is nonregulated and opaque and thus trader supervision falls for internal control in the bank itself.

By the eyes of a trader, there is an undeniable temptation to short the unregulated OTC Loco market via for example forwards contracts and then dump futures contracts in COMEX causing all US dollar-denominated gold prices to fall as different markets follow each other. As the price of gold falls, the short position in the unregulated market gains. Although the trader is likely to lose money when dumping the COMEX gold futures contracts the OTC position could be even more leveraged resulting in a net gain from the manipulation. This would be one way to profit from suppressing the gold futures market.

As discussed in chapter 3.4.2, Stenfors makes a clear case in his book about how a small group of individual market participants account for the majority of volume in any given currency cross rate. The CFTC has come to similar conclusions in the commodity derivatives markets as is discussed in a “Q & A – Position Limits for Derivatives” document found from the CFTC website.

The Q&A document provides answers to some general questions concerning the 2013 position limit related rulemaking of the CFTC. The goal of this particular rulemaking is stated by the document as follows:

The proposed rulemaking would establish limits on speculative positions in 28 physical commodity futures contracts traded pursuant to the rules of a designated contract market ("DCM") as well as swaps that are economically equivalent to those contracts, as mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. **The proposed rulemaking on position limits would enable the Commission to meet its statutory responsibility to set such limits in order to prevent excessive speculation and manipulation while ensuring sufficient market liquidity for bona fide hedgers and protecting the price discovery process.** (CFTC 2018b.)

Further in the document there is a question "How many market participants will be affected by the proposed regulations?" to which the CFTC answers that approximately 400 traders will be affected. Considering that the regulation is to effect 28 commodity categories ranging from agriculture to energy and metals including gold, 400 traders is a very minuscule sampling of all market participants. The document specifies that the CFTC estimates that only 21 traders in the metal's category, including both precious and non-precious metals, would be affected by the proposed ruling. (CFTC 2018b.)

The bolded comment is key in the examination of the dumps in COMEX. The purpose of futures position limits is by the words of the CFTC: "To protect futures markets from excessive speculation that can cause unreasonable or unwarranted price fluctuations --" (CFTC 2018b). Judging by the actions presented in charts 15 to 21 the price action can be deemed excessive and far from bona fide. In the futures markets, there is a key conflict of interest when it comes to position size limits enforcement. Futures exchanges like other securities exchanges generate the majority of their revenue from trade commissions. Therefore, large trade quantities are in favour of the exchanges themselves which as private entities are meant to generate profits. The exchanges are in charge of enforcing the position limits and so there is a clear conflict of interest between the benefit of the shareholders of the exchange and the integrity of the markets.

3.5.3 Professional Opinions and Conclusion

Although Alexis Stenfors has never traded or invested in gold, he knows many precious metals traders and he noted that there are similarities with the foreign exchange traders. In the interview, Stenfors pointed out that from the regulator reports it is obvious that the gold market has been a wild west at least in the past. He also pointed out that even though from his perspective the foreign exchange markets are even more manipulated than the precious metals markets a lot of precious metals traders in investment banks

come from the currency markets meaning that in previous positions they used to trade foreign exchange related products and thus they share the same traditions. Stenfors also noted that during his career, precious metals market makers and traders used to sit very close to the foreign exchange traders. (Stenfors 21.11.2018.)

When asked for an opinion on the manipulation presented in chapter 3.5.2 Stenfors said that although the strategy sounded risky to him it would be plausible in practice. Stenfors also hypothesised that the potential manipulator could also aim to affect the mood of other traders. By pushing the price down in premarket traders who begin trading in the open would see that gold is down and so they would become bearish. (Stenfors 21.11.2018.)

Gary Savage, David Morgan, Brent Johnson and David Brady were all convinced that the precious metals markets were manipulated in one way or another. David Morgan pointed out that he had researched the subject extensively for his book titled the Silver Manifesto. In the interview, Morgan said that it would be an impossibility for gold not to be manipulated based on the previous cases and his research (Morgan 6.12.2018). Considering Morgan's four-decade long trading experience and over 20 years' experience from the mining industry his outspoken response on gold market manipulation carries substantial weight.

Considering the scale of the manipulation and the vast number of cases from various banks it is justifiable to say that the penalties issued from these market manipulation cases have been insufficient to discourage banks from manipulating the prices again. Whilst it might be difficult to access the actual profits generated from the manipulation it seems that these profits exceed the penalties since new cases emerge on a regular basis.

As a conclusion, there is no question whether the gold market has been manipulated in the past by a variety of market participants. The increasing number of cases brought forwards by the CFTC over the past years and the suspicious actions seen in the COMEX futures suggest that with a high degree of certainty the gold market remains to be manipulated meaning that the market is unable to function efficiently in the intermediate-term.

3.6 The Foundation of Cycles and Sentiment Analysis

Cycles analysis is one of the lesser known forms of financial market analysis and as with all schools of economic thought, there are many different forms of cycles analysis. Some of the most well-known forms of cycles analysis are the Elliot Wave Theory presented by Ralph Nelson Elliot in his book The Wave Principle published in 1938 and the Hurst Cycle presented by Jim Hurst in his book The Profit Magic Of Stock Transaction Timing which

was originally published in the early 1970s. The cycles examined in this report are, however, not based on these theories due to later specified reasons but rather on Walter Bressert's cycles theories which have later been refined by Gary Savage.

This part of the report introduces the aspect of cycles and sentiment analysis and explains the rationale behind cycles analysis. Topics discussed include the theory behind cycles, sentiment indicators used in cycles analysis and the actual interpretation of cycles in the financial markets. Chapter 3.6.2 presents a conclusion to cycles analysis and provides further reference from some of the world's best known investors and their opinions and views on cycles. From now on all talk about cycles refers to the cycles and sentiment analysis discovered by Walter Bressert and refined by Gary Savage unless otherwise disclosed.

3.6.1 How Do Cycles Appear on The Markets

For cycles to appear on the markets, it is required to assume that markets are relatively irrational and inefficient at least in the short-term. As was discussed in chapters 3.4 and 3.5, the gold market has numerous flaws which prevent actual price discovery from happening including market manipulation and human psychology of which manipulation is a mala fide driver and psychology is an irrational price driver. These factors jeopardise the efficiency of the markets to a point at which it is reasonable to believe that investor sentiment is the price driver of the gold market in short-term and market manipulation tends to intensify the emotions of the investors by providing various false signals to the market.

This chapter examines the rationale behind cycles analysis, market sentiment, the interpretation of cycles on varying timeframes as well as the evolution of cycles. Since the cycles theory in question is a non-academic theory there is no official vocabulary available. This report will use vocabulary created by Walter Bressert and further adjusted by Gary Savage since he is the most well-known contributor to Bressert's original work with cycles.

The Rationale Behind Cycles

The definition of a cycle is *a series of events that are regularly repeated in the same order*. Cycles can be found everywhere in astronomy, mathematics, physics, biology and time. Therefore, it is justifiable to say that cycles are natural and reoccurring. Just to name a few cycles that can be found in nature: circulation of nitrogen between air, soil and living creatures called the nitrogen cycle, carbon cycle, photosynthesis, animal migration, monsoon seasons, El Niño / La Niña, 1500-year climate cycle, erosion cycle, earthquake cycle, lunar phase, year, seasons, tide, solar eclipse cycle, galactic year and sound waves.

As humans are natural creatures, it is not surprising that cycles can be found in humans as well. Brainwaves are cyclical, humans have a sleep cycle, consciousness can also be seen as cyclical and humans tend to cycle between positive and pessimist emotions. Cycles can also be found in human actions of which some are constructive, and some are destructive. The business cycle, Kondratiev wave, war cycle, Mantra, numerology and the music theory are all cyclical creations of humans. It is this tendency of cyclicity which plays a critical role in the financial markets as well.

There are multiple ways and timeframes on how cycles appear in the financial markets. For example, the volume cycle in US equities and futures has its peak near the close of the US stock market at 4:30 pm EST as that is when most institutional investors and large speculators exchange positions and take advantage of the increased liquidity. Financial markets also exhibit cyclical asset allocation cycles and price action related cycles. Asset allocation cycles mean the cycling between investors preference of bonds and equities depending on the economic outlook whilst price action cycles mean actual price movements that can be analysed by examining charts.

The principle of cycles analysis is the same regardless of the school of thought. Cycles analysts believe that markets move in cycles or waves. In other words, financial market prices move up and down in a predictable way which can, with experience, be traded profitably time after time. Generally speaking, cycles take place on a variety of timeframes which vary from intraday moves to days, weeks, year and decades. The rationale behind the cyclical approach varies between theories from complex mathematical functions to more simplified approaches. For the cycles examined in this report, the rationale is based on common sense and the fact that humans are emotional and irrational.

According to Walter Bressert's son's website cycletraderpro.com, Bressert became interested in cycles in the late 1960s and early 1970s after studying extensively the works of other known cycles analysts of the time. Amongst others, Bressert studied both the Elliot Wave and the Hurst Cycle and in 1974 Bressert began publishing his own newsletter called the HAL Commodity Cycles in which he shared his findings related to cycles. Bressert also hosted teaching workshops, created computer-based cycles analysis programs and wrote a few books during his career as a cycles analyst. (Cycletrader 2018.)

Later Gary Savage has played a major role in bringing this form of cycles analysis to the public by publishing a newsletter called Smart Money Tracker. Savage has also been featured on some of the industry's appreciated networks such as Kitco, Mining.com and StreetWise Reports (SMT Blog 2018). As Walter Bressert, Savage also studied various

forms of cycles at the beginning of his trading career but eventually decided to choose the theories provided by Walter Bressert due to their reliability from Savage's point of view (Savage 13.10.2018).

Arguably the biggest contribution towards cycles analysis provided by Savage is the thinking that cycles are prone to evolution. Most cycles theories have fixed timing bands or as in the Elliot Wave Theory's case fixed wave counts on which cycles are expected to occur. Even though Savage considers timing bands as relevant tools in cycles analysis, he acknowledges the fact that cycles are prone to evolution which means that timing bands and tools to interpret cycles must evolve as well (Savage 13.10.2018). Another major contribution provided by Savage towards cycles analysis is the emphasis on market sentiment. In the interview, Savage told that adding sentiment to his cycles trading not only provided ratification for the reasons why cycles occur in the markets but it also greatly improved Savage's trading success (Savage 13.10.2018).

What Is Market Sentiment

As mentioned in the previous subchapter, humans are emotional and irrational creatures. According to Psychology Today, it is generally believed that humans have six basic emotions which are anger, disgust, fear, happiness, sadness and surprise (Psychology Today 2016). In the financial industry however, since prices have basically two directions to move, the emotions of market participants also known as market sentiment is often divided into two emotions which are greed and fear. As was briefly discussed in chapter 3.4, human psychology has a prominent effect on the markets. Psychology is at the core of the cycles analysis examined in this report.

The idea behind cycles is that prices are driven by sentiment and big picture fundamentals. Optimistic sentiment drives prices higher as people are willing to pay more for the underlying asset since they expect prices to continue higher. The opposite is true for pessimistic sentiment which causes investors to sell their positions and so the price falls. As was discussed previously humans are prone to act in cycles which means that the buying and selling is also prone to occur in cycles. Sentiment tends to be excessively pessimistic at bottoms and overly optimistic at tops. This is true on all timeframes since most markets have investors and traders acting on various timeframes – from days to weeks and years.

The idea in simplicity is that once short-term traders become overly pessimistic on the underlying asset short-term selling exhausts, a short-term bottom is put in place and price starts to move up. Same applies on intermediate-term when directional traders who take

positions for the next few months. Once again when these traders lose faith in the underlying asset and last novice directional trader has sold their positions, selling exhausts and an intermediate degree bottom is put in place. This also applies to longer-term investors who take positions for many years due to fundamental reasons but end up selling in a capitulation type all out panic move to a multiyear cycle low such as the low in US stocks in 2009. The opposite happens at market tops where investors are complacent and once every investor has bought into the market buying pressure exhausts and a top is put in.

In the interview, Gary Savage pointed out that cycles are merely a timing band tool whereas sentiment is the main driver of cycles. Savage said that “cycles are being driven by sentiment. So when sentiment becomes extreme that’s when a cycle will turn. Cycles are just a normal timing bands to expect that turn”. (Savage 13.10.2018.) For this reason, it is important to have tools to gauge the sentiment of the market participants and while there are many ways to measure market sentiment some have more predictive value compared to others. One of the most used sentiment meters in the financial markets is the Chicago Board of Exchange Volatility Index also known as the VIX index. The VIX index is calculated via a complex mathematical formula but in short, the VIX index measures the amount of volatility premium added to S&P500 index options. Although undeniably a powerful tool especially for options traders, the VIX is not an actual sentiment measure as it does not consider the direction of the move but rather the uncertainty of where prices are over the next 30 days – the expected or implied volatility.

The rationale behind using the VIX index as a sentiment tool is that higher volatility is often associated with uncertainty, an emotion preferably avoided by market participants, and thus the VIX index is often cited as the fear index. In addition, to the VIX there are actual sentiment gauges of which some are freely available, and some are subscription based proprietary data. Some of the freely available indicators which can be used as sentiment measures include the Fear & Greed index provided by CNNMoney, High/Low and Bullish Percentage indicators as well as the Blees Rating. Some more sophisticated proprietary sentiment gauges include indicators provided by SentimenTrader and Jake Bernstein. For the purpose of this report, the indicators provided by SentimenTrader were selected due to Gary Savage’s and the writer’s personal experiences of the data’s predictive value and usability.

Sentimentrader.com is a website operated by Sundial Capital Research, Inc which is a US-based market research company. The website offers a variety of indicators of which in particular the Optimism indicators (Optix) have proven to add relevant predictive value to cycles analysis. The Optix indicators aim to express the public’s optimism and pessimism

of the selected market by calculating a value between 100 – maximal optimism – and 0 – maximal pessimism (SentimenTrader 2018b). Although the construction of the Optix for commodities such as gold is not disclosed on the website the construction of Optix for ETFs as described on the SPDR Gold Trust ETF (GLD) Optix page is based on trading activity in put options versus call options, future volatility expectations, average discount of the fund to its Net Asset Value (NAV) and price behaviour (SentimenTrader 2018a).

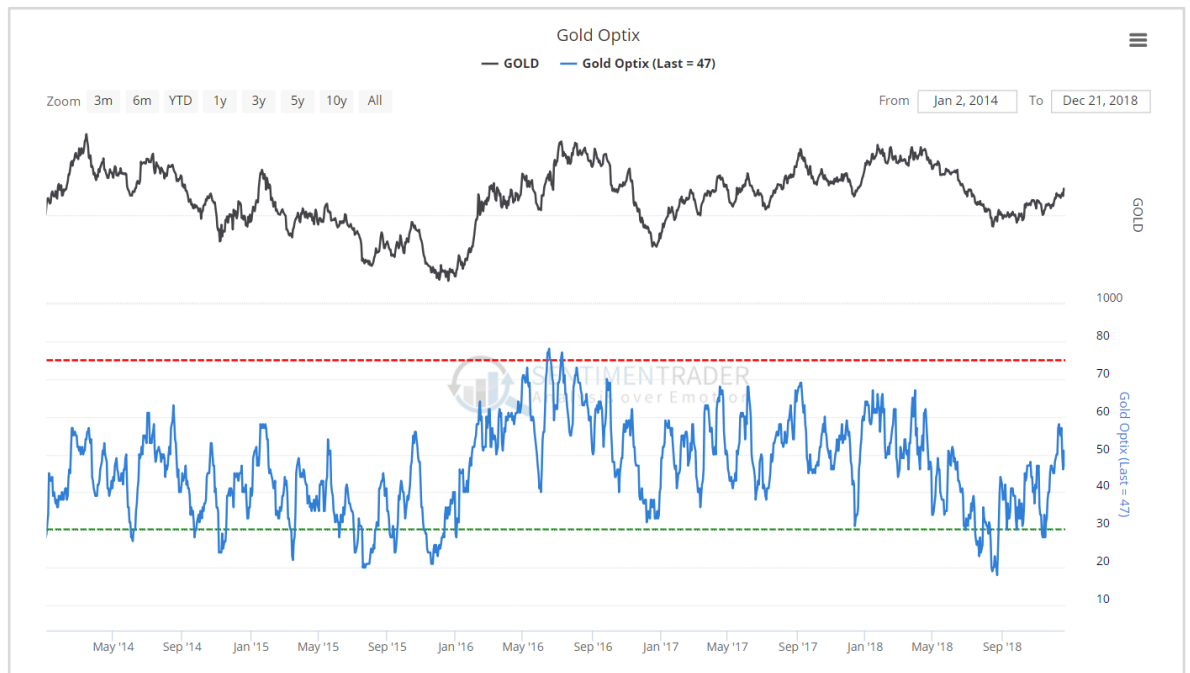


Chart 19. Gold Optix 2014 – 2018 (Sentimentrader 2018b)

As can be seen from Chart 19, the Optix indicator tends to oscillate between excessive optimism and excessive pessimism. Readings below 30 are considered as excessive pessimism and readings above 70 are considered excessively optimistic although these are merely guidelines. Since prices cannot go negative there is a floor to which the price of an asset can fall but theoretically there is no upper limit for prices and so sentiment can stay excessively optimistic for long periods of time. This is why sentiment tends to be more accurate when it comes to predicting market bottoms compared to market tops. A good example of this was seen in Bitcoin in 2017.

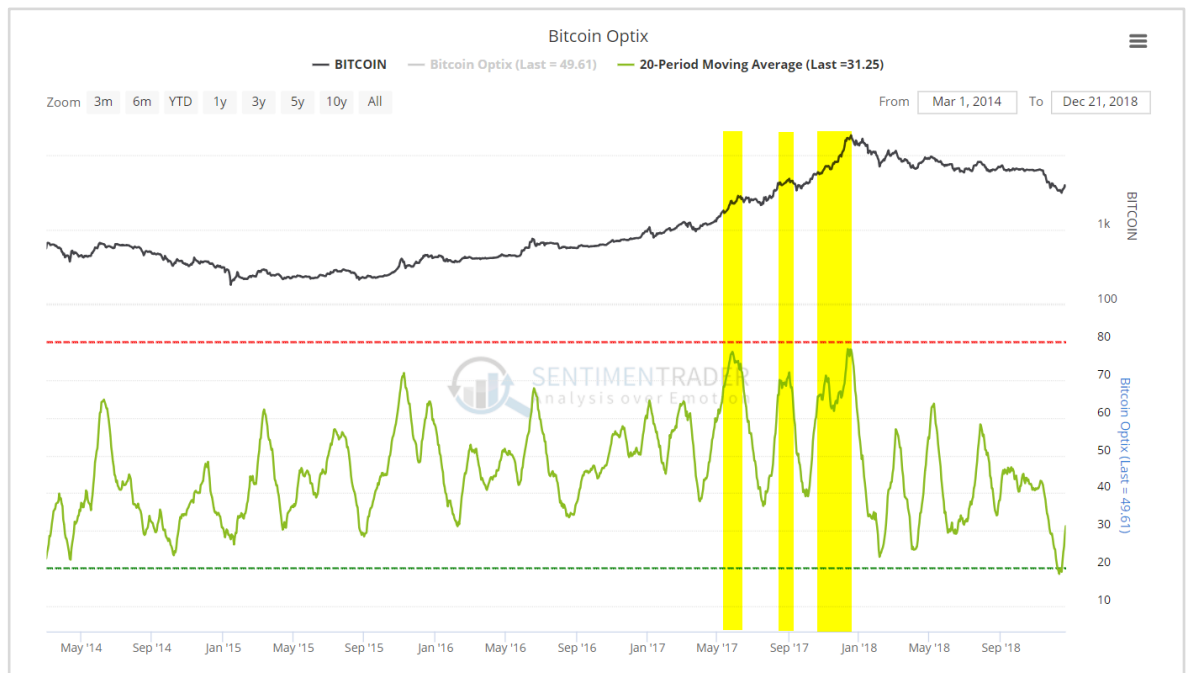


Chart 20. Bitcoin Optix 20 day moving average 2014 – 2018 (SentimenTrader 2018d)

Chart 20 shows the 20-day moving average of Bitcoin based on the XBT ETP between 2014 and 2018. The chart provides a good example of how sentiment can stay excessively optimistic for extended periods of time as it did in Bitcoin during 2017 – yellow areas. The same observation can be made in gold when examining gold's Optix between 2009 and 2011. The price of gold rose over 180 per cent from the low of 2008 to the top of 2011 during which the Optix indicator did not reach excessively pessimistic readings even once.

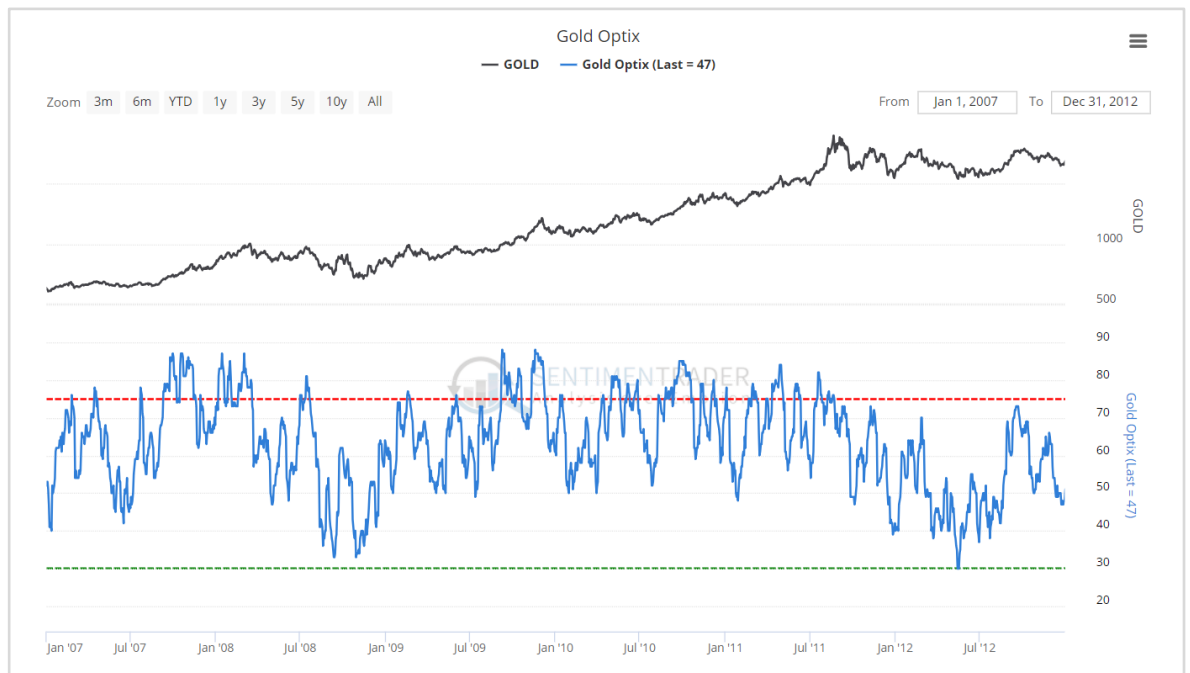


Chart 21. Gold Optix 2007 – 2012 (SentimenTrader 2018b)

Originally Walter Bressert did not use sentiment as a part of his cycles analysis simply because there were no reliable means in the 70s to accurately measure market sentiment. Instead, Bressert used easy to calculate moving averages, the relative strength indicator and the stochastic indicator together with timing bands to recognize and interpret cycles (Bressert 1998, 3). Whilst cycles can still be analysed without using sentiment having access to sentiment indicators provides a slightly deeper look into the markets and the actual drivers of the market and therefore sentiment was selected to this report.

Interpretation of Cycles

The cycles which are important for the cycles analysis in question are price action related cycles which appear on multiple different timeframes. As mentioned, the timeframes vary from days to weeks to even years. Cycles analysts use mainly daily and weekly candlestick charts to calculate, analyse and interpret cycles but monthly candlesticks are also used occasionally on longer timeframes. Since different markets have a different composition of the market participants, different markets have different timing bands for cycles. This is true on all timeframes as some markets have higher participation of small traders which tend to be more day trade oriented compared to institutional investors which cannot move in and out of positions as swiftly on all markets.

The timeframes vary by market, but the structure of a cycle is the same on all timeframes and markets with minor technical differences. A series of smaller cycles construct larger cycles which in turn create bull and bear markets. In essence, all cycles construct from

two phases which are an advancing and a declining phase. The advancing phase precedes a cycle top and the declining phase precedes a cycle low.

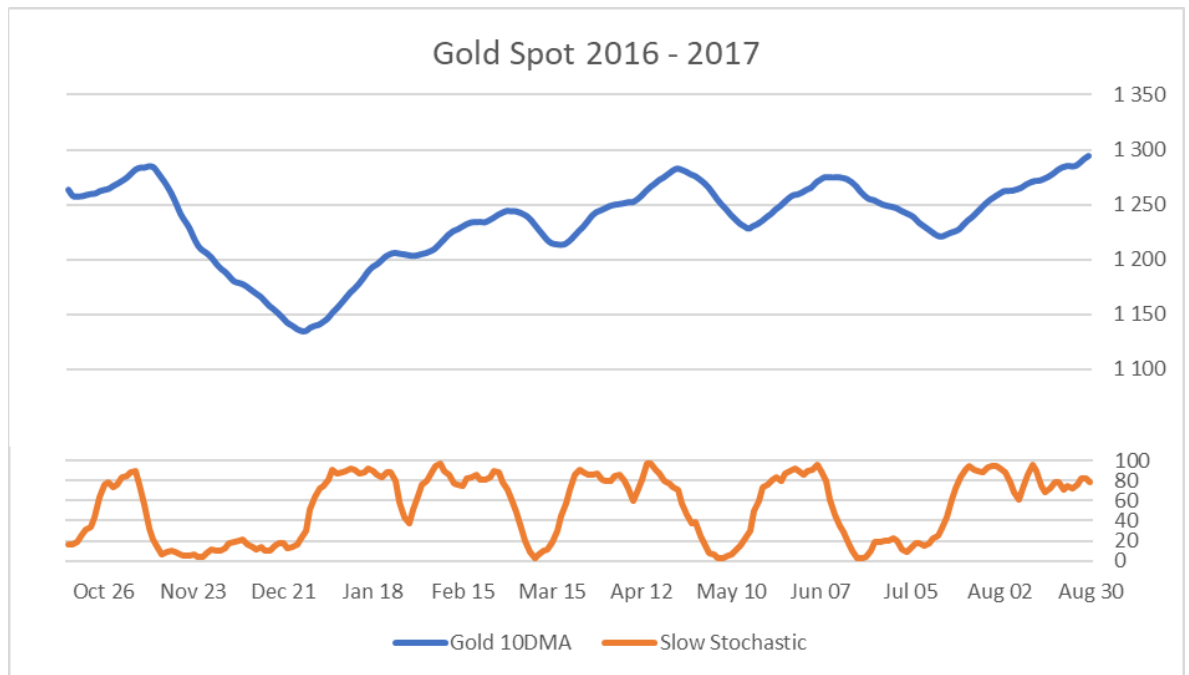


Chart 22. Gold spot 10 day moving average and Stochastic Oscillator (Investing 2019a)

Chart 22 shows a 10 day moving average drawn from gold's US dollar spot price between October 2016 and August 2017. The actual price has been excluded from the chart to make the cycles easier to spot. For an example, intermediate degree cycle lows in gold occurred in December 2016 and July 2017. Smaller daily cycle lows occurred in March and May of 2017 which exhibit similar actions as intermediate degree bottoms only in a smaller scale as the declining phase is usually much shorter in daily cycles. The Stochastic Oscillator has also been added to the chart because it together with other oscillators tend to get oversold during cycle lows and overbought during cycle tops which in combination with timeframes and sentiment readings help to identify the turning points.

In the advancing phase of a cycle, price tends to remain overbought and reverts quickly from oversold conditions. As Chart 22 illustrates between January and April of 2017 the Stochastic oscillator remained overbought (over 80) most of the time and only briefly touched oversold conditions. The opposite is true during the declining phase of a cycle when price tends to remain oversold for extended periods of time. Compared to the advancing phase in Chart 22 during the declining phase of the intermediate cycle – between May and December of 2017 – price reached oversold and remained oversold for long periods of time only briefly visiting overbought in June of 2017.

In real-time, cycles are not as easy to spot as Chart 22 presents but an experienced eye can combine all the tools and interpret cycles as they happen in real time. The next sub-chapters examine different cycles including daily, intermediate, yearly and multiyear cycles to provide further reference to how cycles actually appear on the markets.

Daily Cycles

The shortest cycles are commonly referred to as daily cycles. Even though arguably there are even shorter cycles referred to as half cycles which are imbedded inside daily cycles the daily cycles are the smallest cycles which meet all the requisites of a whole cycle. Although there are no official rules in cycles analysis some commonly used requisites for a daily cycle low (DCL) are broken daily cycle uptrend line, oversold conditions in RSI and Stochastics on the daily chart and a downward sloping 10 day moving average. Depending on the market the daily cycles range commonly between 30 and 60 days with more specific ranges on each market.

In gold daily cycles have historically ranged between 30 and 45 days. However, over the past three years, the cycles in gold, as well as many other markets, have started to stretch. In the interview, Savage reckoned that this may be due to the elongation of the currency cycles which have been running longer ever since the inception of Quantitative Easing policies introduced by the Federal Reserve (Savage 13.10.2018). Currently, daily cycles in gold are typically running between 40 and 60 days and occasionally even longer. Again the definitions are not set in stone and so the lengths of the cycles are objective. For the purpose of this report, daily cycles are too short to be discussed in further detail.

Intermediate Cycles

The second largest cycles are called intermediate cycles which construct from two or more daily cycles. Compared to daily cycles, intermediate cycles are often counted in weeks as intermediate cycles can range between 20 and even as long as 50 weeks. Thus more specific day counts are often viewed unnecessary. Just as in daily cycles the same requisites apply to intermediate cycles but on a weekly chart. Some common requirements for an intermediate cycles low are a down sloping 10 week moving average, oversold oscillators on a weekly chart as well as broken intermediate uptrend line.

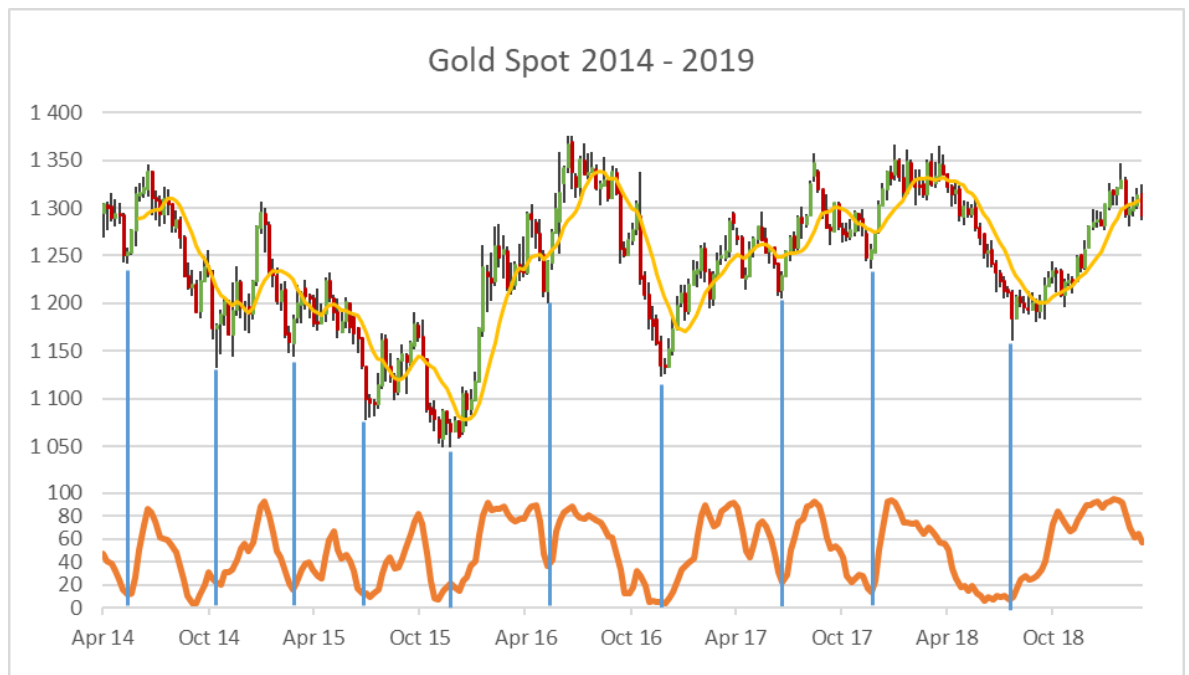


Chart 23. Gold intermediate cycles 2014 - 2019 weekly candles (Investing 2019a)

As can be seen from Chart 23, all intermediate cycle lows (ICL) in gold between 2014 and 2019 managed to generate oversold conditions on the weekly chart and the 10 week moving average did turn down on each occasion. The uptrend line is constructed by drawing a line from the previous ICL to the DCL which offers the lowest uptrend line with the condition that the DCL does not qualify as an ICL. The same principle applies to daily cycles where the uptrend line is often drawn between the previous DCL and a half cycle low.

Chart 19 confirms that during an intermediate cycle low the market tends to become more pessimistic than what it was prior to the bottom. Chart 19 also points out that not all ICLs manage to turn the market sentiment into excessive pessimism. The reason for this is often a strong uptrend which has lasted for a long time already. This was true in the 2016 spring ICL which occurred in May prior to which gold had rallied almost 25 per cent in just five months. During that particular ICL gold's Optix reached 40 while most ICLs in gold push the Optix well below 40 or even below 30.

Multiyear Cycles

The largest cycles are called multiyear cycles and as the name suggests these cycles last multiple years. During these cycles markets can endure both bull and bear markets although a multiyear cycle is often characterized by either a bull or a bear market. Since this report is focused on the next 20 years of the gold market, multiyear cycles are much more important compared to the shorter cycles. Some of the most remarkable multiyear cycles

are the US stock market's four year cycle, the three year cycle in commodities, the three year cycle in the US dollar as well as the eight year cycle in gold.

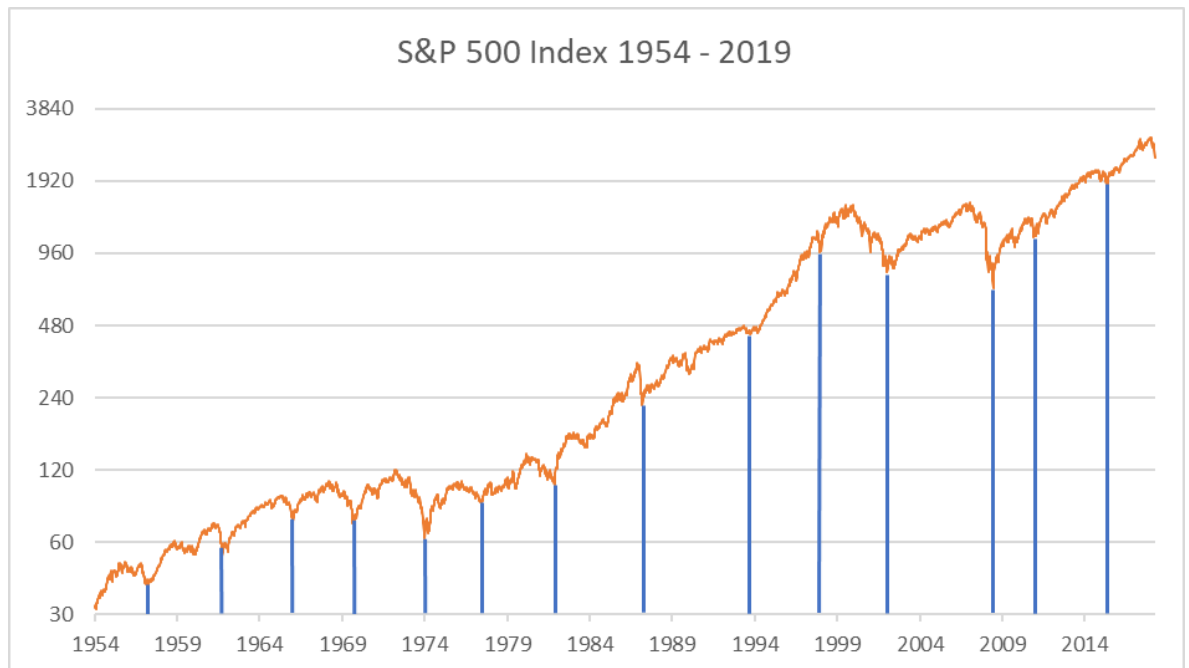


Chart 24. S&P 500 four year cycles (Reuters 2019)

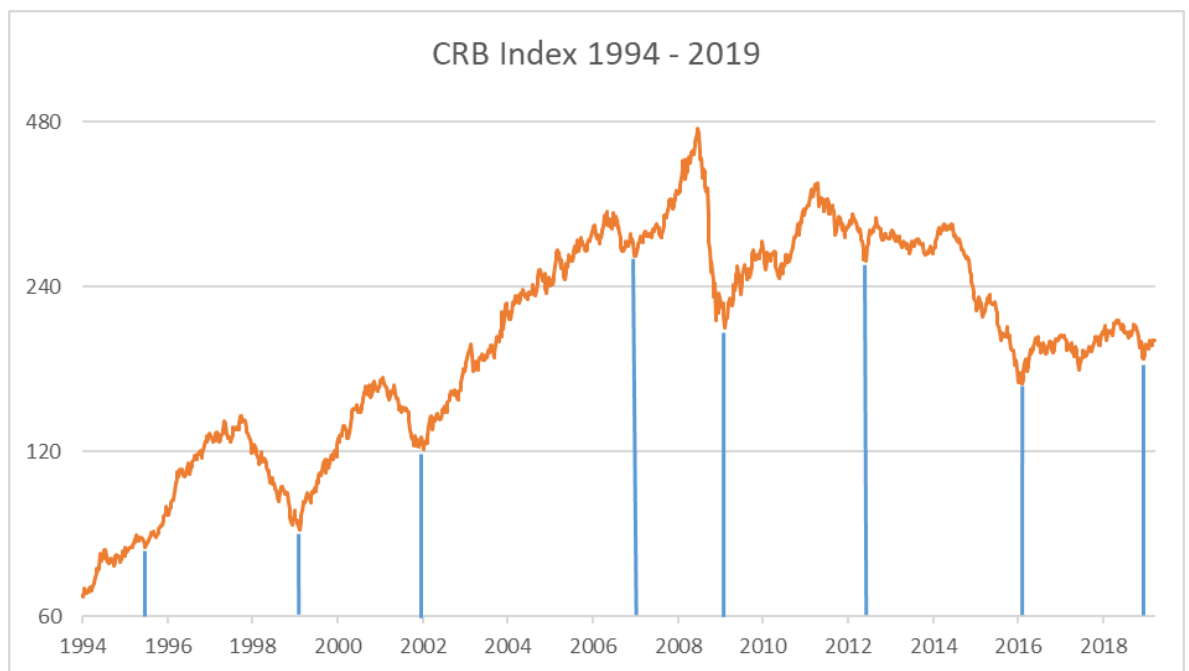


Chart 25. Commodities three year cycle (Investing 2019b)

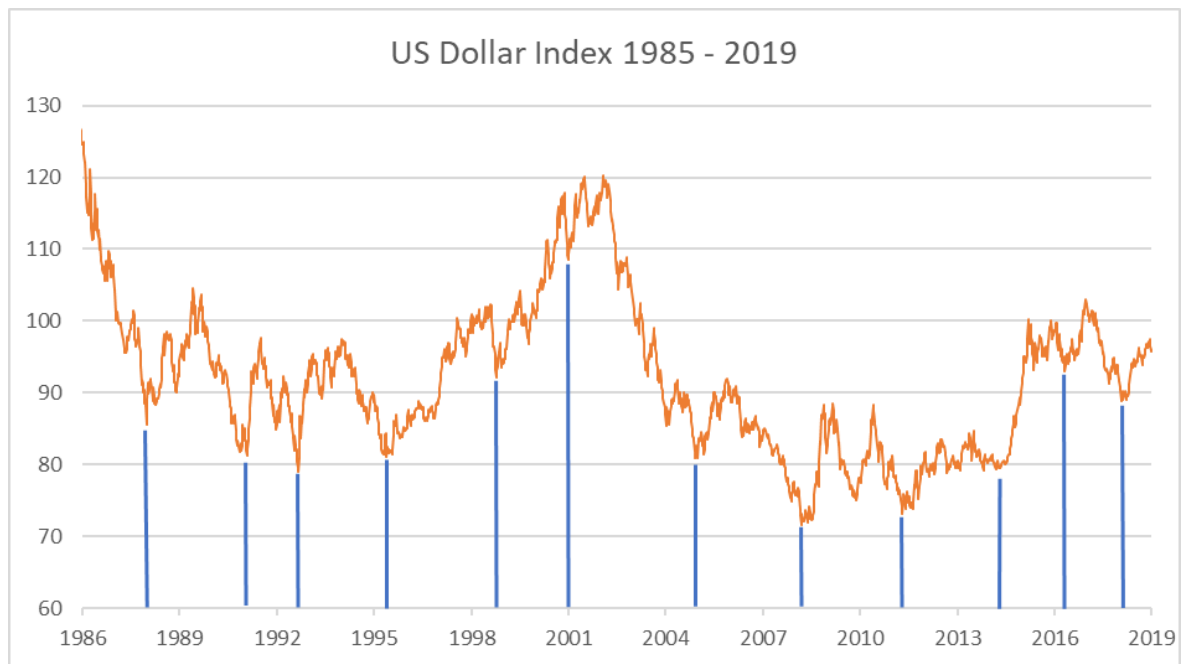


Chart 26. US dollar three year cycle (Investing 2019c)

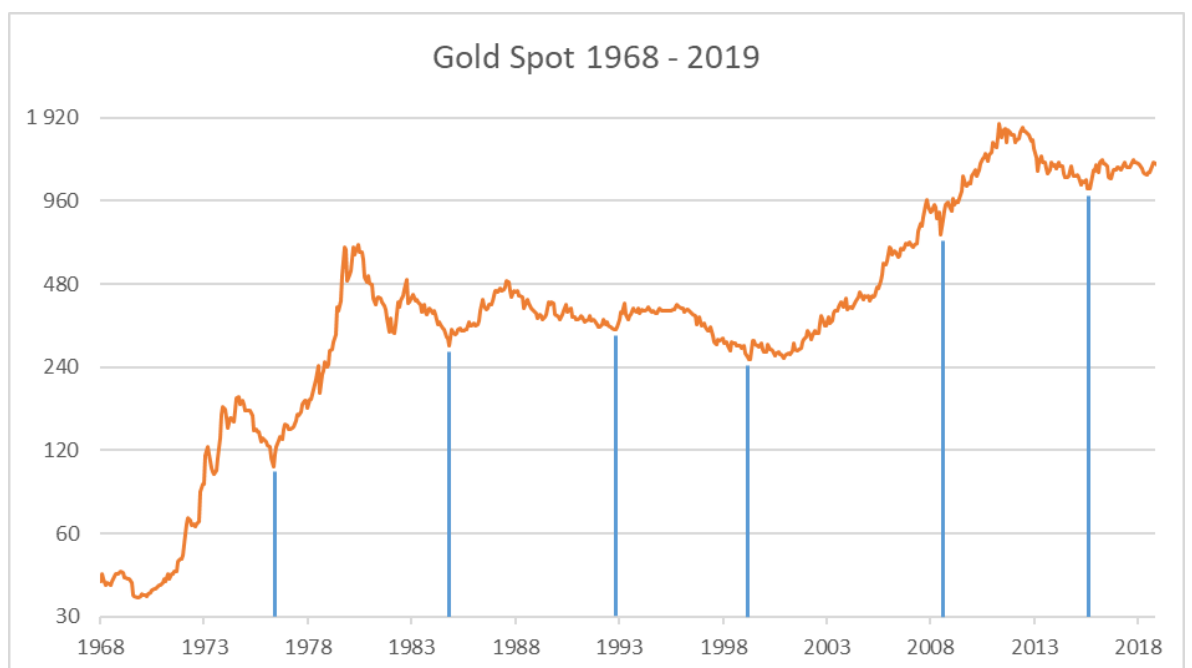


Chart 27. Gold eight year cycle (Investing 2019a)

As can be seen from Chart 24, Chart 25, Chart 26 and Chart 27 above, cycles are rarely exactly the same length which is particularly apparent in the CRB's three year cycle. This behaviour is due to a so called rubber band theory. In essence, the rubber band theory states that markets tend to regress to the mean from time to time. In other words, markets tend to visit their long-term moving averages once a while. In cycles analysis this theory is utilized so that cycles analysts often count cycles in ranges rather than exact figures. As an example the US dollar index (DXY) – which measures the US dollar against a trade-

weighted basket of currencies – tends to move in a three year cycle and since 1980 those cycles have lasted between 19 and 47 months with an average of 35,5 months.

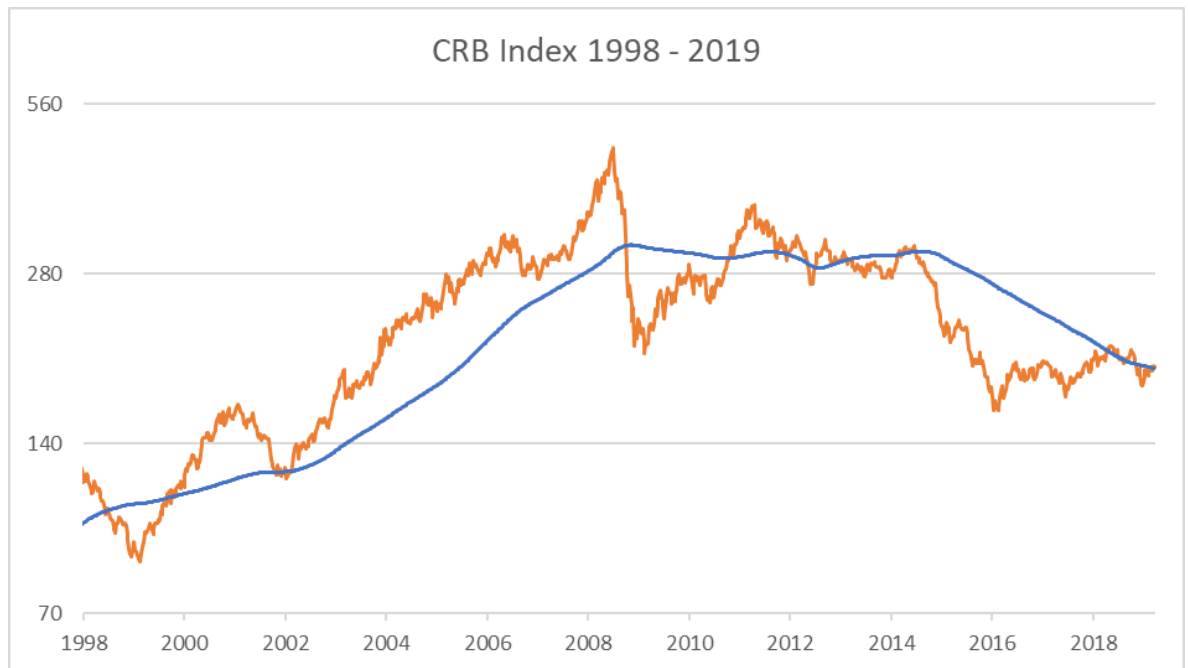


Chart 28. CRB & 200 week moving average (Investing 2019b)

Based on the rubber band theory if the market produces a cycle which length is at the low end of the range it is likely that the cycle will be at the high end of the range in terms of length. The rubber band theory also applies to price. Chart 28 demonstrates that price tends to regress to the mean – which in this case is presented by the 200 week moving average. In early 2008 price had stretched over 50 per cent over the long-term mean which resulted in a violent move below the long-term mean after which the index remained close to the mean for many years. In 2016 price was stretched over 40 per cent below the long-term mean but yet again in 2018 price reached the mean once again. Based on the current setup it is likely that the CRB will once again stretch above the long-term mean in the coming years as 2016's three year cycle low was also characterized with extreme pessimism not witnessed before in commodities.

The multiyear cycles are driven by so called big picture fundamentals. Big picture fundamentals are so large that they shape the world and in essence big picture fundamentals are used to access the overall direction of the market in question. Some examples of big picture fundamentals are the invention of the personal computer in the late 1980s and the invention of mass production in the 1910s. Both of these examples helped drive the US economy at the time so that as the big picture fundamentals remained positive and stock prices continued to rise higher. A current example of a big picture fundamental for stocks

could arguably be advances in nanotechnology whilst for gold, some big picture fundamental could be the prevailing geopolitical instability and the increasing central bank demand.

The reason why multi year cycles have different lengths in different asset classes is the same as in shorter cycles – different composition of market participants. Another reason why multi year cycles have different lengths is that the demand for assets moves differently through the business cycles. For example, the US stock market tends to move in four year cycles whilst the gold market tends to move in eight year cycles. Even though there is currently no academic research done on the subject a case can be made that since gold is often perceived as a tail risk hedge asset – tail risk refers to risk which is considered very unlikely but in case tail risk realizes the consequences are very severe – the need for such hedge is not frequent and thus the cycle in gold is longer compared to the cycle in stocks which tend to follow the smaller and more frequent business cycle.

Evolution of Cycles

As was previously mentioned, one of Gary Savage's major contributions towards cycles analysis is the idea that as in nature, cycles which appear in the markets are also subject to evolution. This way of thinking brings cycles analysis even closer to nature, the root of cycles, namely human emotions, and the fact that cycles occur naturally in the markets. So far, the major evolution experienced in cycles is that many timing bands have elongated from what they were in the past.

In the interview, Savage pointed out that the elongation of cycles does not limit to gold, but that cycles have been elongating in other assets such as commodities and US stocks as well. Savage suspects that the reason lies in the currency markets and the US dollar which cycles have elongated the most. (Savage 13.10.2018.) This reasoning meets common sense since the US dollar is the base currency for US stocks, commodities, precious metals and many currency pairs. Therefore, if the cycles in the dollar lengthen that should have an effect on these assets as well. Although difficult to pinpoint exactly, one of the reasons for the lengthening of the US dollar's cycles could be the quantitative easing policies conducted by the Federal Reserve between 2009 and 2014.

In addition, to elongated cycles, there are other factors which have changed in the years. For an example, the President's Working Group on Financial Markets – also known as the Plunge Protection team – was created in 1988 by Ronald Reagan in response to the stock market crash of 1987 and the reason was to prevent such tail risk events from realizing in

the future (Federal Register 1988). It is known that the Working Group on Financial Markets (WGFM) is allowed to intervene in the markets in order to assure orderly function of the markets (Federal Register 1988). Since the actual actions taken by the WGFM are not publicised, rumours have spurred on how active the WGFM is. The latest verified meeting of WGFM was in December of 2018 when the US stock market was down over 20 per cent in just a few months (Business Insider 2018a). A call to the members of WGFM was made on 24th of December 2018 – one day before the exact bottom for the stock market correction after which the S&P 500 index rose over 20 per cent in less than three months.

When examining the actions in the US stock market futures during the Brexit vote in June 2016 and the US presidential election in October of the same year it does not require much of imagination to think that the V-shaped bottoms on both occasions were not coincidental but rather manufactured. In the interview, Savage also pointed out that during 2017 the US stock market was not allowed to correct normally into daily and intermediate cycle lows and that the market was often “propped up” prior to Fed meetings where they hiked interest rates (Savage 13.10.2018). Market participants often judge events based on the initial reaction the markets have to news events such as Fed meetings. If the markets have been trending higher prior to the Fed meeting in which it is certain that interest rates will be hiked market participants view the hike positively while the reality might be different.

As was mentioned in chapter 3.4.1, the Japanese government agencies have been distorting economic data for years. This puts the trustworthiness of other governments in jeopardy. In a discussion with a person working in the Finnish Financial Services Authority (FIN-FSA) he claimed that the views of the personnel working in FIN-FSA actually have on the economy and the markets differ vastly from the official statements published by the FIN-FSA. He said that authorities fear to publish negative toned reports because the markets may react violently to such reports. For obvious reasons, the person decided to remain anonymous.

While the actions of the WGFM can be deemed market manipulation by many standards the market manipulation conducted by banks is another factor altering cycles on many markets. As was discussed in chapter 3.5, market manipulation in gold is frequent and it would be foolish to state that such manipulation does not affect the markets. Thus, market manipulation has most definitely had an impact on the gold market cycles. Judging the way how cycles have evolved due to market manipulation is very difficult since markets are complex and dynamic systems with close to an endless amount of feedback loops.

Most likely effects of market manipulation include elongated and shortened cycles, temporarily failed support and resistance levels as well as extreme corrections which are the result of not letting cycles run their natural course. Such event was witnessed in US stocks in February 2018 when all of the major indexes crashed over ten per cent in just few days.

3.6.2 Conclusion and Further Reference

In order to conduct successful cycles analysis, it is necessary to combine cyclical timeframes, sentiment, technical indications as well as big picture fundamentals. In essence, the theory is that the financial markets cycle from optimism to pessimism on somewhat predictable timeframes and trigger key technical levels prior to cycle lows and cycle highs. In the end, the goal of cycles analysis and trading is to be contrarian and thus look for turning points as they happen. The evolution of cycles is likely to continue which means that analyst and traders conducting cycles analysis should remain openminded and willing to adjust their strategies according to changes in the markets.

The academic school of thought in finance tends to look at the markets mainly as linear. Forward returns are often projected linearly or exponentially rather than cyclically, central banks are trying to adjust monetary policies to warp the business cycle and there seems to be a general level reluctance to accept the cyclical nature of just about everything. However, there are numerous wealthy individuals who have made their wealth by investing and trading various investment vehicles and who are also known advocates of different cycles. Ray Dalio, James Rogers, Paul Tudor Jones, Ed Seykota and Michael Steinhardt just to name a few are all cycle advocates one way or another. Even though these individuals may have slightly differing opinions on how cycles actually form and in what ways the markets are cyclical, the cyclicity of markets and many other aspects of life are shared topics.

In the interview with James Rogers, he mentioned that based on his research on history, cycles have been present for thousands of years. Rogers also said, "I don't know anything that has been going up or down forever -- for the most part we've always had cycles in everything, and we always will". (Rogers 27.11.2018.) Rogers has also said that cycles are natural, and that the world has always had economic cycles (Kitco 2017a). David Morgan also identifies as a cycles advocate having said in the interview that "I'm absolutely convinced that they [cycles] exist -- not only in the financial markets but also on a sociological level as well. -- I'm convinced that life is a series of cycles and you could not convince me otherwise" (Morgan 6.12.2018).

In an interview by Bloomberg, Ray Dalio also identified as a cycles advocate by saying: “everything happens over and over again for similar cause-effect relationships”. In the same interview, Dalio discusses his latest book titled “The Template For Understanding Big Debt Crisis” which revolves around the idea that debt cycles follow a systemic pattern which can be analysed and thus debt crisis like the 2008 meltdown can be accessed and predicted accurately prior to the event. Dalio also describes the cyclical approach of the book by saying “I think it’s essential for everybody to understand -- the logical sequence of event that makes these [debt crises] all the same. -- They all play out pretty much the same way except there are inflationary and deflationary ones”. (Bloomberg 2018a.) Another famous investor who has testified to cycles is Paul Tudor Jones who had reportedly spoken with Stanley Druckenmiller at a Robin Hood Investors Conference about commodity cycles which he has identified to last roughly 30 years (Business Insider 2014).

With all the evidence at hand, it is appropriate to suspect that cycles are prone to appear in almost every aspect of the world including the gold market. The type of cycles analysis examined in this report may not be perfect, as no approach is, but the theory has been found useful in practice and therefore larger gold market cycles are examined in this report. The cycles analysis part of the market analysis is discussed in the second scenario presented in chapter 4.2.

4 Market Analysis

This chapter is the core of the report and serves a purpose of connecting the dots within the theoretical framework as well as providing conclusions and an answer to the question “Where is gold heading over the next 20 years”. This part of the report describes three potential future scenarios for gold with different approaches. The first scenario is based on the gold market fundamentals with focus on supply and demand. The second scenario examines gold from a cycles point of view with focus on gold’s eight year cycle, market sentiment and the necessary big picture fundamental drivers for the multiyear cycles in gold. The third scenario examines gold’s future from a monetary point of view and discusses the rationale behind central bank gold accumulation and repatriation. The third scenario also hypothesises the potential remonetisation of gold and the supporting evidence and movements behind gold’s remonetisation.

While each of the scenarios aims to discuss supporting factors for the scenario at hand each scenario also discusses the relevant risks for gold prices from the scenario’s perspective. Since markets are dynamic and complex the scenarios alone are not enough to form a reliable picture of the next twenty years for gold. Therefore, at the end of the market analysis part of the report is the ‘Results and the Most Likely Outcome’ chapter which aims to combine all of the three scenarios into an all-inclusive picture.

4.1 First Scenario: Fundamental Supply and Demand Drivers

As mentioned before the first scenario examines gold’s future outlook from a purely fundamental supply and demand perspective. This chapter assumes that the global geopolitical atmosphere remains relatively stable, meaning that gold’s demand and supply trends which have been present over the past 20 years remain constant, for the next 20 years. This scenario is focused on examining the supply and demand trends of the gold industry taken that other factors such as political tensions and inflation are held constant. The next chapters examine how demand and supply in individual segments has evolved and the fundamental risks which gold faces over the next 20 years. It is important to note that this scenario is raw as it does not consider the geopolitics around gold. The first scenario is the baseline scenario on which other aspects are built in the second and third scenarios.

4.1.1 Demand Trends

As was concluded in chapter 3.3.2, gold’s demand can be divided into four segments which are jewellery, investment, industrial and central bank demand. Since the gold market has multiple aspects from uses in electronics to central bank monetary demand there

is no clear correlation between gold demand and the price of gold. The big picture in gold is driven by the stability of the economy which has been relatively unstable ever since the 2008 financial crisis. This instability provides a stable and continuous demand for physical gold as investors accumulate long-term holdings. The demand for physical gold has many supporting factors for the next 20 years although individual segments could see downturns in demand if the price of gold starts to fall the same way it did in 2013. The following subchapters address the demand trends in each of the segments individually.

General Demand Remain Consistent

The general demand for gold has been defined in this report to include the jewellery, investment and industrial demand. The central bank demand for gold is a segment of its own as it is the only category which has absolutely no correlation to the price of gold – at least for now. Therefore, it has its own subchapter below whilst this subchapter tackles the rest of gold's demand segments. This subchapter discusses the demand trends for these segments which are likely to drive the price of gold over the next 20 years.

Gold's jewellery demand has fluctuated throughout the 21st century. In the short-term, demand has been trending up after the low of 2 007 tonnes in 2016. Prior to 2009, there was a clear inverse correlation between the price of gold and jewellery demand. Since then the jewellery demand for gold has been somewhat positively correlated with the price of gold. The sudden increase in demand in 2013 was likely caused by falling gold prices across the world and shows signs of two trends. As the price of gold fell dramatically in 2013 the old negative correlation emerged in the demand trends as people who had not been buying into the high prices between 2009 and 2012 showed up to buy gold jewellery.

The second trend is that if the correlation between the price of gold and jewellery demand has turned positive on the long-term basis the instability of the world's economy spurred further jewellery demand for gold in 2013. Therefore, the gold jewellery investor focused on fundamentals was willing to buy more as prices fell. Once the price of gold will begin to trend again, either up or down, the correlation between jewellery demand and the price of gold will get clearer. Based on the long-term trend gold jewellery demand is likely to remain above 2 000 tonnes over the next 20 years providing consistent demand for gold and therefore supporting the price.

Industrial demand for gold has been in a declining trend throughout the 2000s although demand has remained somewhat stable since 2015 at around 330 tonnes per year. Due to gold's unique properties, the implications for gold are likely to be further researched re-

ardless of the price of gold. Demand for new technologies amongst the general population has been rising ever since the 1980s and the invention of the PC but the consumer tech market has become saturated as most people on the planet already have smartphones and access to the internet. Gold's role in electronic appliances is very low compared to other elements such as copper and silver and so the demand for gold in the conventional technology segment is more likely to fall than rise.

Although there is potential in nanotechnology and medical demand for gold, these sectors utilize gold's unique properties of malleability, oligodynamic effect and corrosion resistance which are present even in the tiniest gold particles. Due to gold's relatively high price point, manufacturers aim to minimize the use of gold and so gold is often used in microscopically thin layers. This means that the technology demand-side is more likely to utilize gold's unique properties and make use of gold more efficiently rather than increase the use of gold. Based on the evidence, the technology demand for gold is likely to fall or remain constant over the next 20 years without affecting the larger picture that much.

On the investment side, as was illustrated in Chart 8, after three years of falling gold prices from 2013 to 2015 the EFT Fund flows turned positive in 2016 and have remained positive ever since even though the US dollar price of gold has been stuck in a range between 1 050 and 1 370 dollars. Investment demand for gold in terms of ETFs and similar products is highly correlated with gold's price which to some extent amplifies gold's swings in the market both to the upside and downside. However, as with the technology demand, the ETF demand for gold is largely an insignificant factor at current volumes.

Judging purely on the general rise in the demand for ETFs and by the rise in gold held by physically backed gold ETFs, it is likely that the demand for gold-backed ETF's will continue to rise in the future regardless of gold's price. Even though gold prices fell in 2008, demand for gold ETFs rose nearly 27 per cent in 2008 and over 90 per cent in 2009 as gold's price began to recover. As can be seen from Chart 8, the peak in ETF gold holdings was reached in 2012 which was one year after the all time highs in gold. Although the ETF holdings have begun reflecting both up and down moves in gold's price, the big picture demand trend for physically backed ETFs continues to point up and will provide support as long as gold prices remain relatively stable or trend up.

Gold bullion demand is mostly driven by tail risk hedging and to some extent speculation on the price of gold. Total investment demand for gold accounted for about 27 per cent of gold's total demand in 2018 which makes investment demand an important factor for gold's yearly demand. Investment demand for gold is positively correlated with the price of

gold although as was seen in 2013 the demand for gold bullion comes with a lag relative to downswings in the market price of gold. Bullion investors are more long-term oriented compared to ETF investors and therefore they adapt to changes in the market slower compared to the ETF investors. EFT investors were selling gold in 2013 whereas bullion demand for gold was at the peak for the millennium as long-term investors saw the fall in price as an opportunity to accumulate. The investment demand is positively correlated to the price of gold, but it acts with a lag providing stability and diversity to the demand-side of gold. Over the next 20 years, the demand for gold bullion will most likely either increase from the current level or remains stable providing support for the price of gold.

Central Banks Are Picking Up

As was discussed in chapters 3.1.2 and 3.3.2, central bank gold demand has been rising since the 2008 financial crisis with individual countries like China accumulating gold reserves ever since the turn of the millennium. Although gold is not recognized as money today, based on the monetary demand from central banks, gold could well be remonetized over the next 20 years. At roughly 15 per cent, central banks are major contributors to yearly gold demand. The remonetisation of gold would most definitely increase the demand for gold very rapidly. Even without remonetisation, based on the current trend and the global uncertainty surrounding the US dollars reserve currency status, there is no reason to suspect that central bank gold demand would start to decline anytime soon.

As a matter of fact, most recent data points suggest that central bank gold demand is more likely to increase over the next ten years as the trend seems to be accelerating. The elevated monetary demand for gold by various countries around the world reflects worldwide worries over the current financial system and the US dollar hegemony. Although the deeper reasons for the central bank gold buying activity are examined in the third scenario presented in chapter 4.3 it should be noted here that the central bank gold demand is likely to remain strong and possibly even accelerate from here. The central bank demand for gold continues to support the price of gold and is likely to cause pressure for gold prices to rise over the next 20 years as more countries join the accumulation trend.

4.1.2 Supply Trends

Based on the data from the World Gold Council, the demand for gold has been stable in most sectors with certain sectors including central banks increasing their gold purchases at an accelerating pace. Therefore the demand-side of physical gold is solid. However, the same cannot be said for the supply-side. As was explained in chapter 3.3.3 the weighted average AISC for the top 9 gold mining companies is roughly 890 USD with the current

mining output. It is very likely that gold mining will become exponentially more difficult over the next 20 years which is one of the largest supply-side trends which the sector faces. The following subchapters examine the largest factors and trends which are likely to influence gold's supply over the next 20 years.

Traditional Gold Mining

Whilst the annual supply of gold from the mining industry has been rising yearly since 2009, many analysts are convinced that traditional gold mining has reached a peak in gold production. 'Peak gold' has two sides to it: first is the depletion of economically minable gold reserves and second is developments in the mining technology. Since gold is a rare element, the cost of mining gold is relatively high to begin with as finding gold is difficult. The US Geological Survey estimates that there is approximately 57 000 metric tonnes of gold left in underground deposits. Based on raw math that should provide enough gold for the gold mining industry for the next 17 year at the current rate of mining. However, this does not include the fact that not all of the 57 000 tonnes is accessible with the current technology nor is it economical to mine at current gold prices. With the current technology, the world could run out of gold by 2039 or even sooner as the industry simply cannot produce gold due to technological restraints no matter what the price of gold is.

Although mining technology has progressed significantly over the past 20 years, in a physical world the laws of physics apply. This means that even though technology has advanced a lot, at some point the systems reaches maximum efficiency. This can be observed easily from the battery industry. Lithium is and has been the go to option in the portable battery industry. However, the batteries themselves have not developed significantly over the past ten or twenty years. Development has happened, but a more significant factor has been the improved efficiency of the chips which utilize the energy reserved in the lithium-ion batteries. The lithium-ion battery itself has almost reached its theoretical maximal efficiency and the capacity of energy it can hold due to the laws of physics. Noted that the mining industry is most likely far from maximal efficiency, the situation in 20 years could be closer to what the battery industry is struggling with today.

Another major problem raised in chapter 3.3.3 was the rising cost of energy and its implications to the price of gold. Since the energy industry and more specifically the oil industry has been struggling with low energy prices, the sector's exploration segment has stalled. This means that as the world is likely to keep consuming lots of oil and other forms of energy, the slowing production combined with stable demand will drive the price of energy up. As oil prices rise, the costs of mining will also rise. This will increase the average AISC of the gold industry and squeeze the miners even further.

The situation in the oil industry is somewhat similar to the gold mining industry. In the oil mining industry, new economical deposits are likely to be found with investments towards exploration, but low prices have not encouraged producers to explore. However, in the gold mining industry, the problem is not only the lack of investments but also the lack of success from exploration. As only one in four thousand junior gold miners make it into an economically operational mine, the difficulty does not encourage new people to the sector which is likely to cause a supply shortage in the future much like the one which is imminent in the oil market at the moment.

The combination of depleting economically minable gold deposits and the rise in the cost of energy are likely to create upward pressure for gold prices over the next 20 years. If gold prices do not rise but the cost of production goes up that will ultimately lead to the same situation where the oil industry is – low margins relative to high demand – which will subdue exploration even further. However, opposed to the oil industry the gold mining industry cannot find new economical deposits as easily as the oil industry can and so the squeeze in gold's price in this scenario would be even more extreme than the one oil is potentially about to witness. To conclude, either the mining industry needs to find more economical ways to produce gold – of which one is potentially the development of e-waste mining – or the price of gold needs to rise to make currently uneconomical gold deposits into economically minable.

Recycling and E-waste Mining

As was mentioned in the previous subchapter, the gold mining industry could run out of minable gold in the next 20 years. Therefore, in order to satisfy the increasing demand for gold, recycling has to take a larger role in the gold industry. Currently recycling accounts for approximately 25 per cent of gold's yearly supply. Out of that only ten per cent comes from the recycling of electronics. This means that currently, less than three per cent of gold's yearly supply comes from e-waste. With technology improving, gold's e-waste recycling will become more efficient and is likely to affect the supply-side of gold at least for the next two decades. The reason why e-waste recycling has limitation is that at some point the technology sector and the e-waste recycling sectors will reach neutrality between the amount of gold used and the amount of gold recycled by the technology industry.

The traditional jewellery recycling, as was discussed in chapter 3.3.3, is positively correlated to the US dollar price of gold. As the price of gold rises, more jewellery scrap will be recycled around the world increasing supply and from the fundamental perspective suppressing the price. In the same chapter, it was pointed out that jewellery demand also

evolved a positive correlation to the price of gold after the financial crisis of 2008. This means that as the price of gold rises, both the supply of gold jewellery and the demand for gold jewellery increase. As of 2019, gold's jewellery demand is almost twice the amount of gold's jewellery recycling. This means that although the world recycles more jewellery gold as prices rise, the world consumes much more jewellery gold at the same time. With the equation being a net negative in terms of the supply of gold, the market is still accumulating jewellery gold which supports the price of gold. This trend is likely to remain as it is at least for the next decade especially if the US dollar price of gold starts to rise.

As a conclusion, the recycling of gold will become increasingly crucial for the gold industry as minable deposits run out. E-waste recycling will increase the supply of recyclable gold, but it remains to be seen how big of an impact it will have. Although electronic waste is plentiful, it is uncertain how much gold the recycling will yield. Most electronic appliances have only a little bit of gold in them and so the total amount of gold that can be collected via e-waste mining is debatable. As the recycling of electronics also involves lots of regulation in the developed economies, it is also uncertain how well the growth of the sector will be received by policymakers. In the end, the world cannot recycle more gold than it consumes and so in the long run e-waste recycling is a zero-sum game for gold supply.

4.1.3 Risks from Fundamental Perspective

Due to gold's unique properties discussed in chapter 3.3.1, it is highly unlikely that gold will be completely replaced by other materials over the next 20 years. Jewellery demand continues to account for over 50 per cent of global gold demand and with thousands of years of history backing the jewellery demand, it is hard to see a scenario where that demand segment would suddenly diminish. This does not mean that the price of gold could not go lower and there is risk involved even from the fundamental side.

David Morgan considers a technological breakthrough which would make gold much more readily available to be the biggest risk for gold prices over the next 20 years. Morgan did not go into speculation over what such a breakthrough could be, but he noted that one breakthrough could be the ability to extract gold from seawater although he considers that to be unlikely over the next 20 years. The amount of gold in seawater measures in the parts of billions and so extracting gold from seawater is virtually impossible with current technologies at least in any meaningful quantities. (Morgan 6.12.2018.)

The key in the fundamental risks for gold is the ease of extracting gold. Currently extracting gold from the ground is energy intensive and difficult. A technological breakthrough could be for example the ability to create gold artificially the same way as some diamonds

are currently produced. The advances in nanotechnology could make it possible to combine atoms together to create artificial gold although, as the idea of extracting gold from seawater, this remains highly speculative and unlikely for the foreseeable future.

From the fundamental perspective, the investment demand for gold is the most vulnerable since it is the quickest to react negatively to falling gold prices. Investment demand accounts in total more than a quarter of gold's yearly demand making it a significant demand segment. The demand of physical gold bullion is primarily fundamental and long-term oriented, but if gold prices would continue to remain at the current subdued levels the interest towards gold as an asset class would fall. When asked about the downside risk for gold the legendary investor James Rogers replied:

"The biggest downside [for gold] is that the world's economies are more or less stable and static and not much happens. We've had many periods in history where gold did nothing and not much happened. If that happens again for an extended period of time, people will lose interest in gold until there's a crisis or a semi-crisis -- in the kind of scenario outlined there's not going to be increased demand for gold, so gold will be stable and just sit around and do nothing for many years. I don't expect that, but it could happen." (Rogers 27.11.2018.)

As a conclusion, the biggest risks for gold from a fundamental supply and demand perspective are a major technological breakthrough and the loss of interest towards gold as an asset class. The risk of a major technological breakthrough is difficult to access since the rate of change in technology is immense and technologies available today were unimaginable 20 years ago. This means that a technological breakthrough should be considered as a tail risk for gold. On the other side, the lack of interest towards gold investments could result in lower prices but the 'peak gold' concept explained in the previous subchapter means that the demand for gold could slow down and still prices would remain stable since the supply of gold is also subject to fall.

4.1.4 Conclusion on The First Scenario

The demand-side for gold is stable as long as prices remain stable. The most fluctuating segment of the demand-side is investments. Compared to the global stock market the total market capitalization of the above ground physical gold market is less than ten per cent of the size of the global stock market (World Bank 2017b; WGC 2019e). Adding other asset classes such as real estate, the bonds market and other commodities, the relative market capitalization of the gold market is much smaller. This means that there is an underlying potential for investment gold demand to skyrocket over the next 20 years if the

price continues to trend higher and the interest towards the yellow metal increases. However, if the global economy continues to trend up without a major financial crisis or global recessions investment demand for gold is likely to stall.

Apart from investment demand, the demand-side for gold is stable and likely to grow as central banks continue to accumulate gold. From this perspective, the demand-side for gold is likely to cause upward pressure for the price of gold over the next 20 years. With below-ground gold supplies depleting at an alarming rate it is necessary for the gold mining industry to generate extraction methods which can utilize gold from currently inaccessible and deposits. The cost of exploration relative to the gold found has been increasing meaning that it is becoming harder to find economically minable gold deposits at the current price of gold. With 'peak gold' at hand, the supply-side of gold is likely to fall over the next ten years which will also put upward pressure on the price of gold. The supply-side of gold is likely to get a boost from the recycling of e-waste. How big of an effect will the so called e-waste mining have on the industry remains speculative.

As a conclusion to the first scenario, the fundamentals of the gold market suggest that the price of gold will trend higher as supply contracts and demand will either rise or remain stable. The volume of the move to the upside based on solely the fundamentals presented is close to impossible to access and for that other measures are required. Based on fundamentals presented in this scenario, the trend for gold prices should be higher or sideways rather than lower over the next 20 years.

4.2 Second Scenario: Resuming the Secular Bull Market

The second scenario examines gold's future via cycles and sentiment analysis and compares gold's historical trends to the modern day. Compared to the other scenarios this scenario is the most technical although this scenario also addresses the fundamental drivers for the cycles. Chapter 4.2.1 discusses the big picture fundamentals necessary to conduct cycles analysis on long-term and chapter 4.2.2 addresses the actual cycles analysis. Understandably, the fundamentals are multidimensional and can be found all across the report, but the ones outlined here are some of the most essential. Chapter 4.2.3 examines the potential risks which could affect the cycles in gold whilst chapter 4.2.4 draws the conclusion for the cycles analysis with risks and potentials considered.

4.2.1 Big Picture Fundamentals

As was explained in chapter 3.6 the foundation of cycles analysis is fundamentally down-to-earth, common sense based and rational. Long-term cycles are driven by big picture fundamental factors such as the supply and demand for the asset in question and the behaviour of the underlying unit of measure which in most cases is the US dollar. Therefore, it is impossible to produce reliable long-term cycles analysis without considering the fundamentals. For gold, the key fundamental factors to consider are monetary policy, inflationary pressure and gold's supply. It could be easily argued that demand for gold has a major role in the gold's cycles. However, as was concluded in the first scenario, the demand for gold is likely to remain strong and so the supply of gold has a larger role over the next 20 years. Certainly, there are many more factors involved but these three aspects provide the core fundamental picture for gold. This chapter will briefly discuss the fundamentals which provide the basis for the multiyear cycles.

As was discussed in chapter 3.3.3 David Morgan is convinced that the world is experiencing 'peak gold' or in other words a major peak in the production output of gold. The 'peak gold' concept is discussed in detail in chapter 4.1.2. The supply and demand equation is one of the deepest principles of economics and even with manipulation present in the markets the fundamentals always win in the long run. With gold production peaking and supply-side stable or growing the prevailing situation supports higher gold prices. 'Peak gold' also comes with the fact that average AISC's for gold miners are relatively close to the current market price which means that from a fundamental perspective there is not much air in the current gold prices. While 'peak gold' is a significant long-term price driver for gold monetary policies are much more significant and more acute big picture fundamental for gold.

As was concluded in chapter 3.1, gold should be considered as money due to its history and the geopolitical importance which is still present to this date. Monetary policies affect all financial markets since monetary policies aim affect the underlying measures of assets – the currencies. Whereas chapter 4.3 examines a thorough monetary system reform scenario this chapter is focused on macroeconomic fundamentals and outlooks in the United States which are likely to act as price drivers for gold in the coming years.

Interviewees were unanimous on the view that the US dollar's reserve currency status will depreciate over the next 20 years and that was seen as the main driving factor for the US dollar over the same time period. A severe depreciation of the dollar's current reserve currency status as described in chapter 3.1.1 is seen to cause severe depreciation to the US dollar's purchasing power. Jan Von Gerich mentioned in his interview that he sees the dollar depreciating over the next five to ten years not only due to the dilution of the dollar's reserve currency status but also due to structural change in the global economic sphere. Von Gerich sees the US economy's share of the world's economy shrinking which will cause downward pressure for the US dollar over the same time period (Von Gerich 11.12.2018).

In his newsletter, Gary Savage has stated multiple times that he believes that low interest rate policies combined with QE are likely to cause a large wave of inflation including asset bubbles (SMT Premium 2018). Loose monetary policies have resulted in asset bubbles since the policies feed malinvestment. Since interest rates around the world are at record low levels there is little room for conventional stimulus once recession hits. This means that in order to stimulate the economy central banks around the world will have to turn to quantitative easing which in turn will cause the devaluing of the currency – inflation.

As was discussed in chapter 3.1.1 inflation created pressure for the gold price to rise in the 1960s and was a partial factor in the removal of the US dollar gold peg. Whilst inflation measures are always subjective as it is practically impossible to measure the price of every single item in the whole economy. This is why policy markets and market participants follow standardized inflation measures including the Producer Price Index and the Consumer Price Index. Both of these measures are widely accepted inflation measures around the world but policy markets such as central bankers often focus on the consumer prices and more specifically either the urban CPI or an averaged version of the CPI.

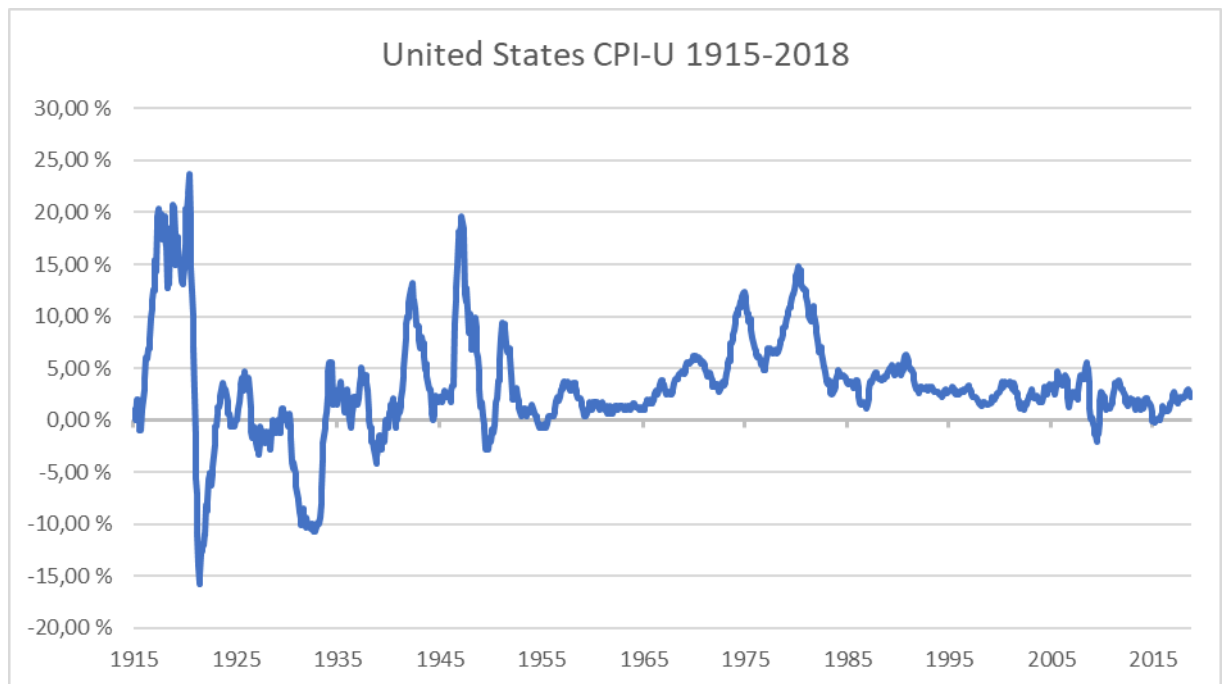


Chart 29. United States Consumer Price Index (Federal Reserve 2018c)

Chart 29 presents the CPI-U (Consumer Price Index - Urban Consumer) data from the Federal Reserve bank of St. Louis' website. As can be seen from the chart inflation has significantly stabilized since the 1980s. However, the CPI has received lots of criticism over the years partly because the CPI has been modified multiple times. The modifications are often seen as a way to manipulate the inflation figures lower towards the Federal Reserve's target inflation rate. The Fed's official target inflation rate is and has been for many years two per cent on year to year basis (Federal Reserve 2018a).

Shadow Government Statistics (SGS) is a newsletter type subscription service founded by John Williams and operated at Shadowstats.com. The service aims to provide alternative government statistics such as unemployment, GDP, monetary supply and inflation figures. SGS provides inflation data calculated with the old standards used in 1990 and 1980. Examining these data series provides further confirmation to the assumption that the government issued CPI numbers are significantly flawed. Based on data provided by SGS, inflation measured by the 1980 US government standard was in late 2018 9,9 per cent in year over year terms and even when measured with the 1990 standard inflation is close to six per cent on year over year bases (SGS 2018a; SGS 2018b). These figures are remarkably higher compared to the official headline CPI of two per cent.

It is often seen as the Fed's responsibility to provide key economic data to the public free of charge. An alternative way of seeing the data is to provide confidence towards the US economy for investors and especially consumers. Being a widely trusted organization, it is

likely that if the Fed were to report inflation at close to ten per cent that would not be considered as price stability and a confidence collapse in the dollar would be imminent. Fed is often seen to provide overly positive forward guidance considering the US government as was clearly the case during the 2008 financial crisis. A historically outrageous case of misleading Fed commentary was presented the day after Lehman Brothers had filed for bankruptcy when most Federal Reserve officials still believed that the American economy would keep growing despite the self-evident and ongoing financial crisis (NY Times 2014).

In the interview, David Brady pointed out that by lowering the official inflation figures government can lower the future values of their inflation index liabilities such as social security. Brady also pointed out that lower inflation figures suppress bond yields and helps to maintain confidence in the underlying currency. (Brady 22.11.2018.) This can be seen as the major reason for altering the official ways to measure inflation. The confidence provided by lower inflation figures also helps suppress commodity prices including gold which would otherwise trade higher in anticipation of generally higher prices.

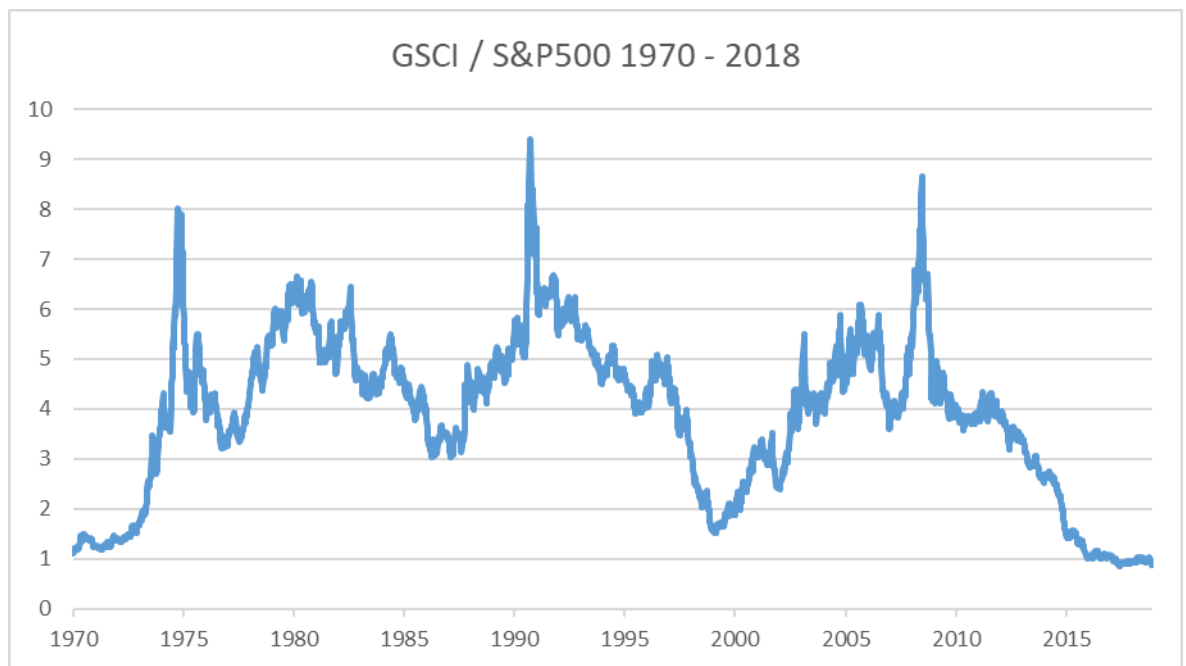


Chart 30. GDCI commodity index / S&P500 index (Investing 2018c; Investing 2018d)

Chart 30 presents the ratio between the S&P GSCI commodity index, which is a broad commodity basket, and the S&P500 US stock market index. When the ration is low, commodities are undervalued compared to the broad US stock market and vice versa. As can be seen from the chart commodities, in general, are historically undervalued at the moment compared to the US stock market. There have been only three occasions when the

ratio has fallen below three and those occurred in the early 1970s before the US experienced two decades of high inflation, late 1990s when stock market around the world were booming amid to the Dotcom bubble and now. Chart 30 also contributes to the fact that even though conventional inflation can be perceived to be low for the time being, asset prices apart from commodities, such as stocks, have witnessed extraordinary gains over the past decade which can be perceived as asset inflation.

What is interesting is that all the peaks above seven in the ratio can be linked to major crisis events. The first peak over seven occurred in 1974 which coincided with the 1970s oil and US inflation crisis which led a period of elevated inflation in the US during the late 1970s and 1980s. The 1990 peak occurred during the Gulf oil crisis which led to the early 1990s recession and the 2008 peak in the ratio coincided with the global financial crisis of which the aftermath is still felt across the globe. On the contrary, cyclicity is also notable in the ratio as low reading have acted as major turning points after which commodities have outperformed the stock market for extended periods of time and vice versa.

On a global scale, inflation has already begun to emerge in many large economies outside the US. History has shown that gold acts as an inflation hedge in times of high inflation. In theory, gold should counter the devaluation of the currency by rising in price. This is true in many countries around the world experiencing high inflation and even hyperinflation today of which Venezuela, Iran, and Argentina are prime examples.

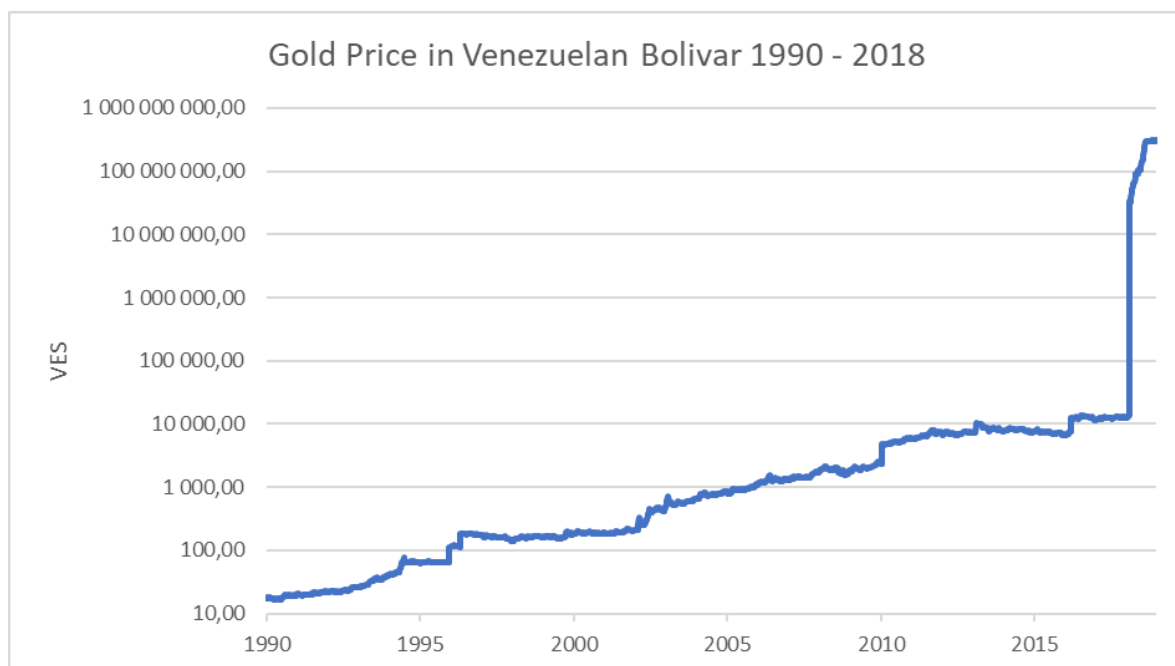


Chart 31. Gold in Venezuelan bolivar (Investing 2018e; Investing 2019a)

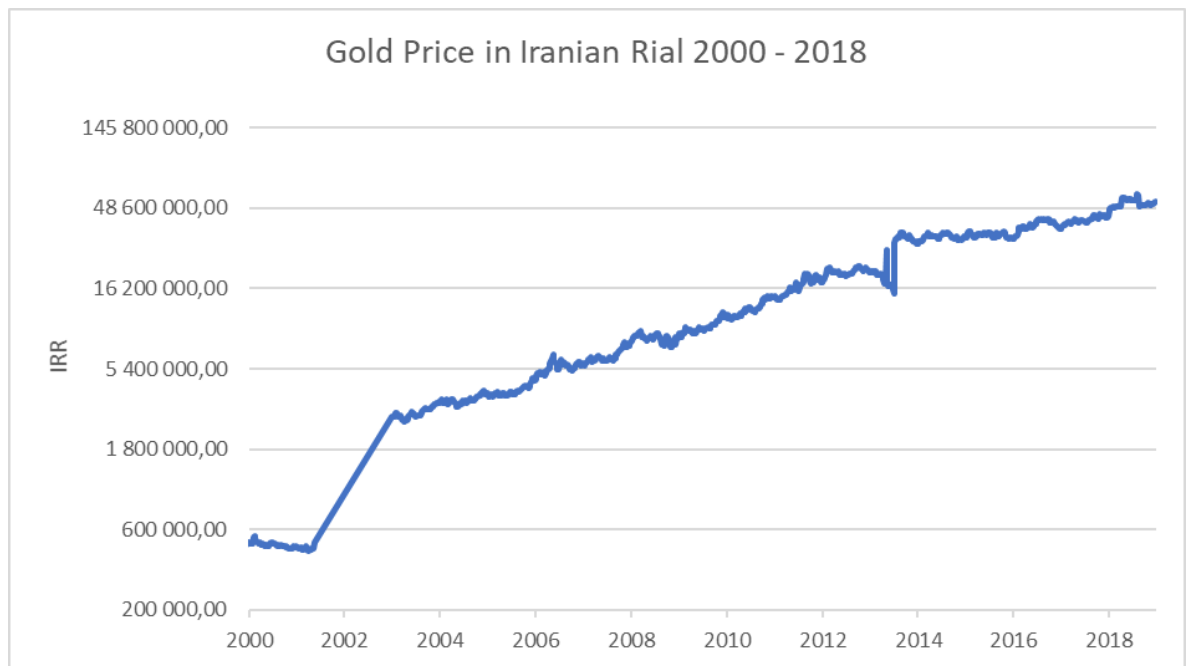


Chart 32. Gold in Iranian rial (Investing 2018b; Investing 2019a)



Chart 33. Gold in Argentinian peso (Investing 2018a; Investing 2019a)

Considering the elevated demand trends addressed in chapter 3.3.2 it is projectable that gold will enjoy stable demand over the next few decades. The supply side of gold's supply and demand equation is likely to contract due to 'peak gold'. The supply and demand fundamentals provide a base for gold prices, but the most significant factor remains to be monetary policies. The monetary policies which will be conducted during the next recession are one of the key drivers for gold because central banks are deemed to resolve into

highly inflationary policies such as QE. High inflation is already sweeping across the developing markets which are likely to further contribute towards the demand for gold.

Considering that inflation is likely to increase due to monetary policies conducted over the past ten years and to be conducted in case of a new global recession and that gold production is likely to be trending down over the next 20 years fundamental should provide upward pressure for gold prices over the next 20 years. Next chapters will utilize this assumption to examine gold's cyclical outlook.

4.2.2 Cycles Analysis for Gold

The fundamental outlook for gold over the next 20 years is positive with solid big picture demand factors driving the demand for physical and supply being likely to contract. This means that cycles should have a trend of higher highs and higher lows – a bull market trend. This chapter examines the prevailing market trend, multiyear cycles and the prevailing sentiment of the gold market. This chapter also compares the current situation to some of gold's historical price trends to determine which part of the cycle gold is at.

Gold Market Cycles

As was briefly discussed in chapter 3.6.1, gold has a tendency of moving in eight year cycles which is one of the longest cycles in the financial markets. Judging by the aggressive price action seen in 2016, the change in the sentiment environment in gold and the gold miners the last eight year cycle low took place in December of 2015 with high degree of certainty. Prior to that the eight year cycle lows have occurred in 1976, 1985, 1993, 1999 and 2008. To be precise the eight year cycle has lasted on average 94,4 months or 7,87 year since the first identifiable bottom which occurred in 1976.

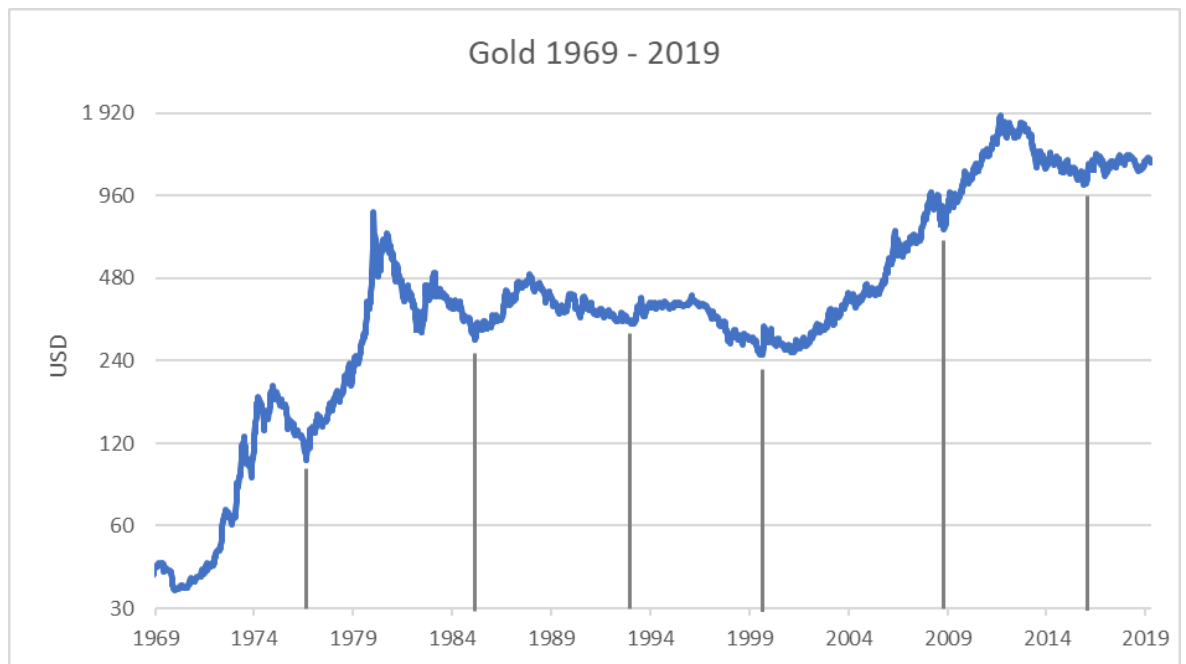


Chart 34. Gold's US dollar price with eight year cycles (Investing 2019a)

Chart 34 presents all of the eight year cycle lows in gold beginning from 1969. Assuming that the eight year cycle bottomed in 2015 and based on the 94 month average length of the cycle the next bottom in gold is due in October of 2023. However, as was discussed in chapter 3.6.1, shorter cycles are often followed by longer cycles. With the previous eight year cycle being slightly short of at 86 months it is likely that the current eight year cycle will last longer than the average cycle duration of 94 months suggesting that the next cycle low could stretch to 2024 or even longer depending on the US dollar's cycles.

As of April 2019, the high for the current eight year cycle is 1 375 USD which occurred just seven months after the eight year cycle bottom in December of 2015. Prior to the current eight year cycle, the quickest top in an eight year cycle occurred in 1987 when that cycle topped in 33 months. Whilst it could be that the current eight year cycle topped in seven months it is highly unlikely judging by the previous cycles. The statistics do not favour an eight year cycle top on year one of a new multiyear cycle. This would suggest that the current eight year cycle will reach over 1 375 USD before topping as the current top would be very much premature. Another important piece in understanding the gold cycles are the cycles in the US dollar.

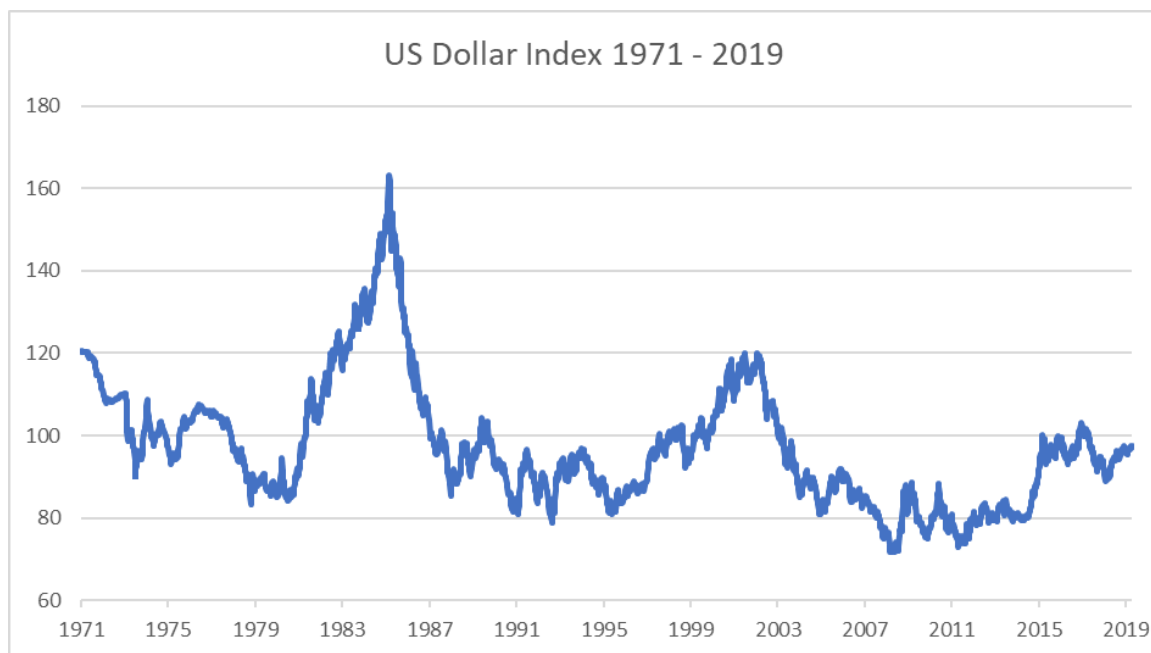


Chart 35. DXY long-term secular bear market (Investing 2019l)

Since over the past 50 years gold has been mainly traded and measured in US dollars the US dollar index is mostly negatively correlated to gold in the long-term. As can be seen from Chart 35, the US dollar has been in a long-term secular bear market since 1985 with two clear cyclical bull markets between 1992 – 2001 and 2008 – 2017 whilst maintaining the bigger picture of lower highs and lower lows. As was briefly discussed in chapter 3.6.1 the US dollar index moves in shorter three year cycles of which the last bottom occurred with high certainty in February of 2018.

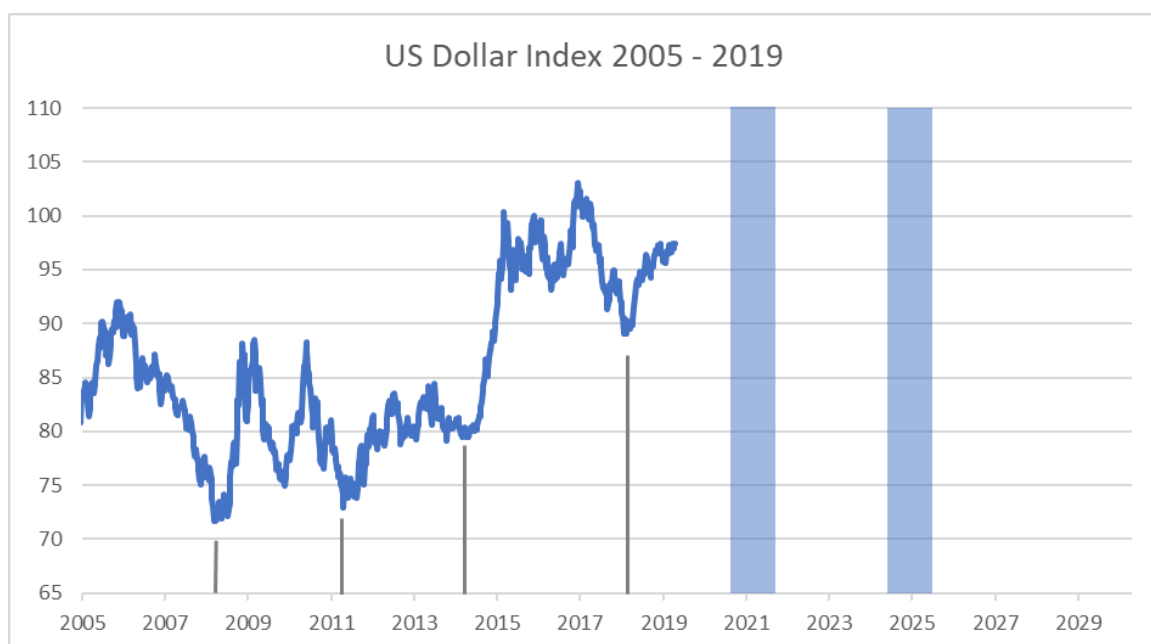


Chart 36. DXY with previous and forecasted three year cycle lows (Investing 2019l)

With the three year cycle likely to have bottomed in February 2018 this puts the current DXY's cycle at roughly 15 months old and so the cycle is slightly less than halfway from the average of 39,5 months. Considering that the previous three year cycle ran 46 months it could be that this cycle will run a little short. It is feasible to expect for another three year cycle low for the DXY somewhere between the fall of 2020 and the spring of 2021. This should give tailwind for gold during the declining phase of the dollar's three year cycle. Considering that gold could find its next multiyear cycle low as late as in late 2024 or early 2025 it is not unforeseeable to predict that there could be two three year cycles left for the US dollar before a multiyear cycle top in gold.

The cycles expert Gary Savage mentioned in the interview that he suspects that the 2016 low in CRB was a generational low for commodity complex meaning that those lows are unlikely to get revisited over the next few decades. Savage also suspects that commodities are in a long-term secular bull market which he suspects to be driven by a financial crisis type of event which will realize in the US dollar. Although the data is very limited on the ultralong-term the US dollar index seems to move in a 15 year cycle. With the previous 15 year cycle low occurring in 2008 Savage suspected that dollars the 15 year cycle topped in early 2017 meaning that the US dollar is in the declining phase of its massive 15 year cycle. The next 15 year cycle bottom in the dollar is due in 2024 or 2025 assuming that cycles do not stretch or shorten significantly before that. (Savage 13.10.2018.)

A famous cycles advocate Ray Dalio has also been speaking of stagflation which would send the US dollar lower and commodities higher. In September 2018, Dalio told Business Insider that he believes that the US dollar was in a short squeeze due to the amount of dollar-denominated debt, but he believes that the debt squeeze will be passed by the end of 2020. Dalio also points out that during the next recession the US will have to sell lots of dollar-denominated debt in order to cover the deficits. The combination of foreign demand for the dollar exhausting and the US issuing record deficits during a recession will be very negative for the dollar according to Dalio. (Business Insider 2019.)

In 2018 gold was under pressure due to the rise in the dollar. Despite the pressure, gold has continued to exhibit the pattern of higher lows with 2015 low at 1 046 USD, 2016 low at 1 060 USD, 2017 low at 1 145 USD and the 2018 low at 1 160 USD. Since statistically it would be very unlikely for gold to have topped on year one of a multiyear cycle, from cycles perspective, gold is likely to make a higher high above 1 375 USD later in the multiyear cycle. A pattern of higher lows and higher highs would confirm that the gold bull market is intact. With the fundamentals and the dollar cycle aligning the argument, gold is likely to be in a bull market already.

Technical Trends

Markets have three primary trends which are an uptrend, a downtrend and a sideways moving market often interpreted as consolidation. In the financial industry long uptrends are called bull markets and they are characterised with higher highs and higher lows. Long downtrends are called bear markets which are characterised by lower lows and lower highs. Consolidations are on the other hand periods when price stays generally in a range without meaningful trending moves.

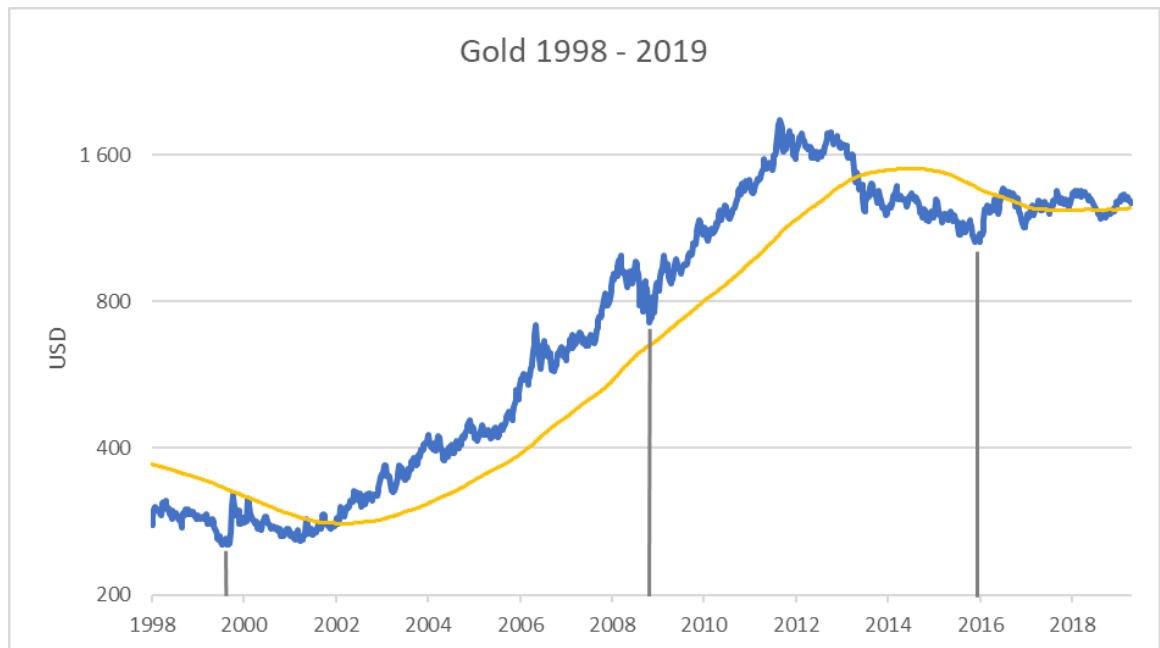


Chart 37. Gold's spot price and 200 week moving average (Investing 2019a)

Chart 37 presents gold's spot price and the 200 week moving average over the past 21 years on a logarithmic scale. The eight year cycle lows have been marked with grey lines. By examining the chart it is clear that gold was in a primary uptrend between 2000 and 2011, between 2011 and 2015 gold was in a primary downtrend, and since December 2015 gold has been in a sideways consolidation. Excluding the actual price action from the chart helps to see the long-term trends more clearly.

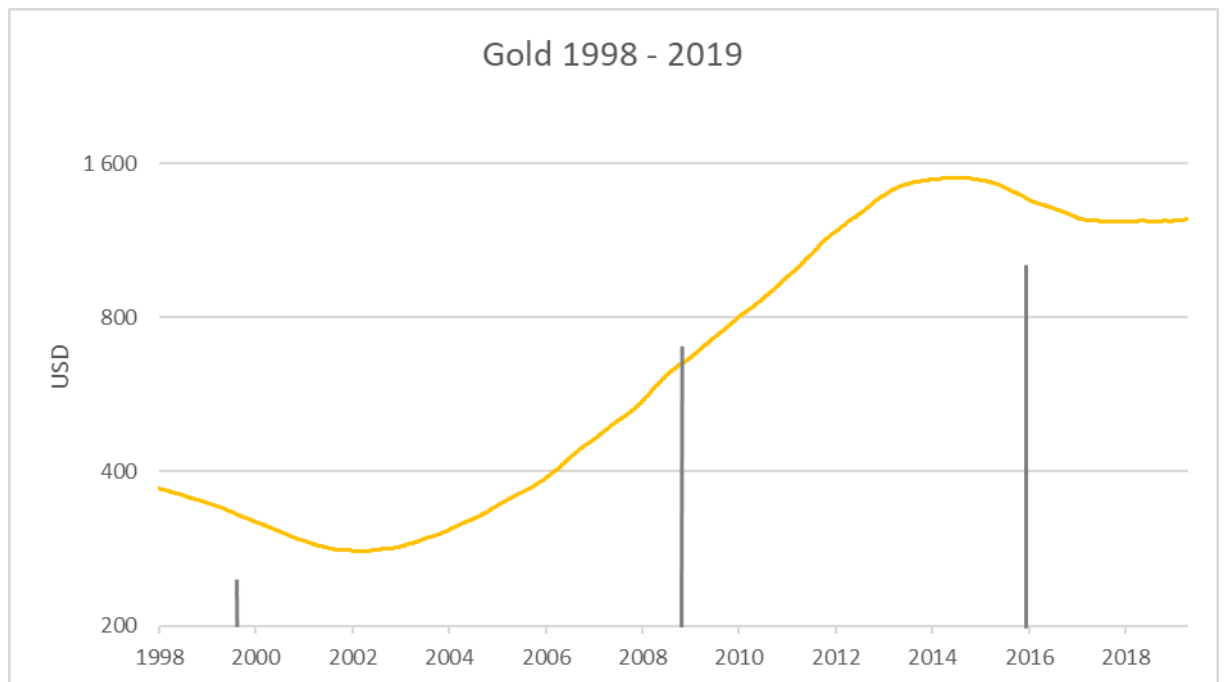


Chart 38. Gold's 200 week moving average (Investing 2019a)

Chart 38 presents the 200 week moving average while the price has been excluded from the chart. This way the primary trends become even clearer and the fact that gold has indeed transitioned from a downtrend into a consolidation phase clarifies. Also the fact that each of the eight year cycle lows over the past 22 years have been higher than the previous one clarifies. The 1990s multiyear cycle bottom occurred in 1999 but the 200 week moving average took almost three years to turn up. As of April 2019 – little over three years after the 2015 multiyear cycle low – the 200 week average is about to turn up suggesting a change in trend. Gold is currently building a base after a four year long bear market and an eight year cycle low much like it did after the previous bear market bottom in 1999. This has also reflected in the price action in GDX.

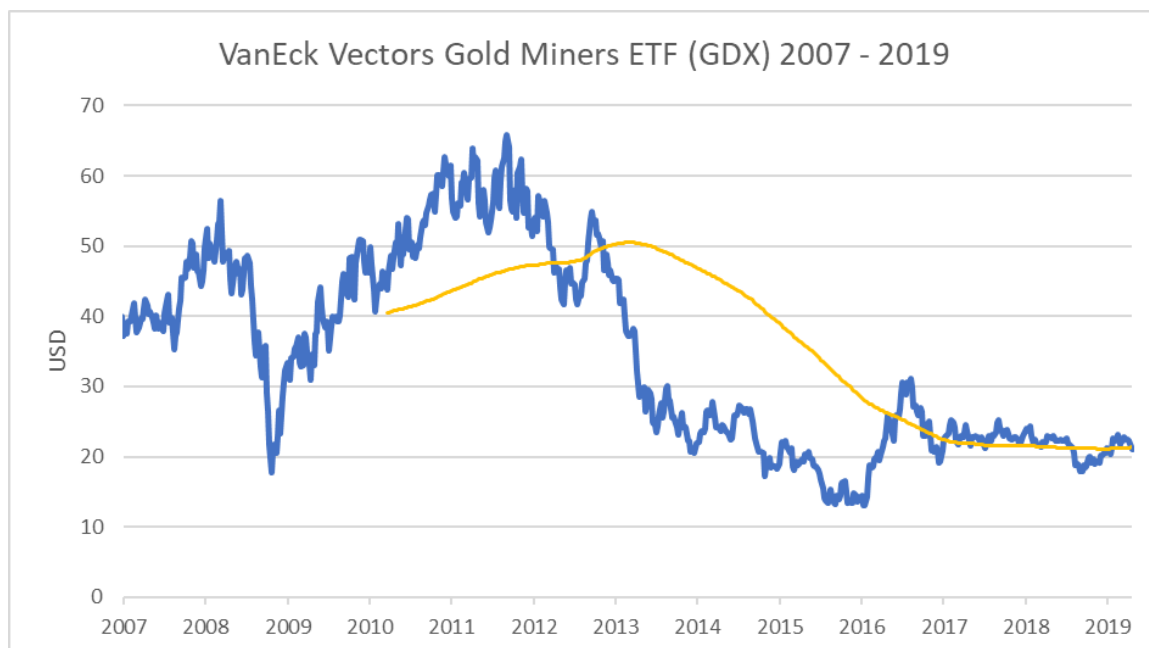


Chart 39. GDX and 200 week moving average (Investing 2019k)

The bear market in gold resulted in an even more severe bear market in the gold mining sector. The gold mining sector lost over 80 per cent of its total market value between 2011 and 2015. This was followed by an incredibly powerful rally out of the eight year cycle low in 2015. The gold mining ETF GDX gained over 150 per cent in just seven months during the first half of 2016. After the initial rally out of the eight year cycle low gold transitioned into a consolidation phase which dragged the gold mining stocks into a consolidation phase as well. As of April 2019, the 200 week moving average in GDX has turned up.

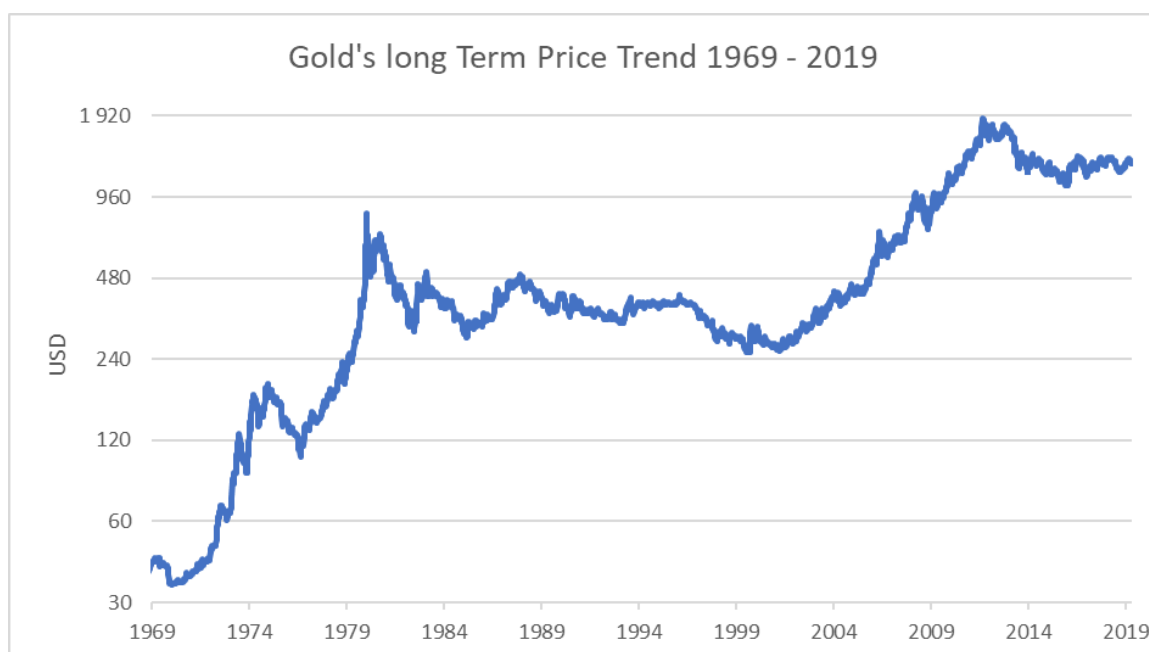


Chart 40. Gold's long-term trend from 1969 (Investing 2019a)

On an even longer timespan gold witnessed a secular bull market between 1971 and 1980, a secular bear market between 1980 and 1999 and since then gold has been in a secular bull market with a cyclical bear market between 2011 and 2015 imbedded within. In the big picture it can be argued that gold has remained in an even larger scale bull trend since gold first became a floating commodity in 1971. The bear market between 1980 and 1999 did not come even close to breaking below the 1976 eight year cycle low at roughly 100 US dollars as the low of the bear market recorded at roughly 250 USD.

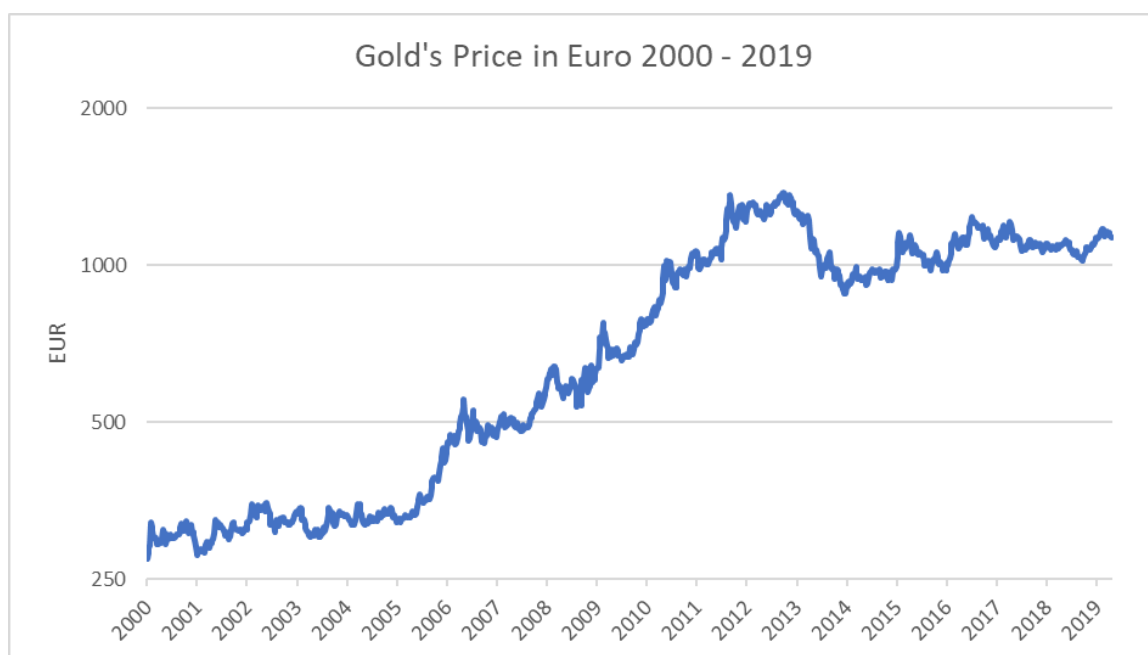


Chart 41. Gold's price in euro (Investing 2019a; Investing 2019g)

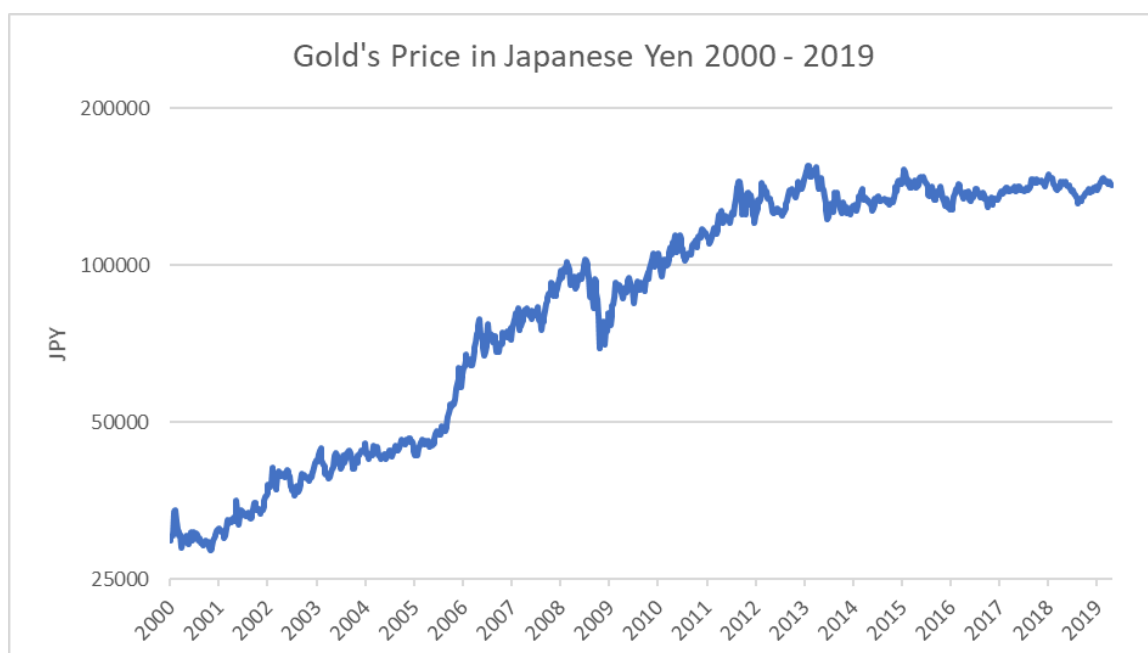


Chart 42. Gold's price in Japanese yen (Investing 2019a; Investing 2019i)

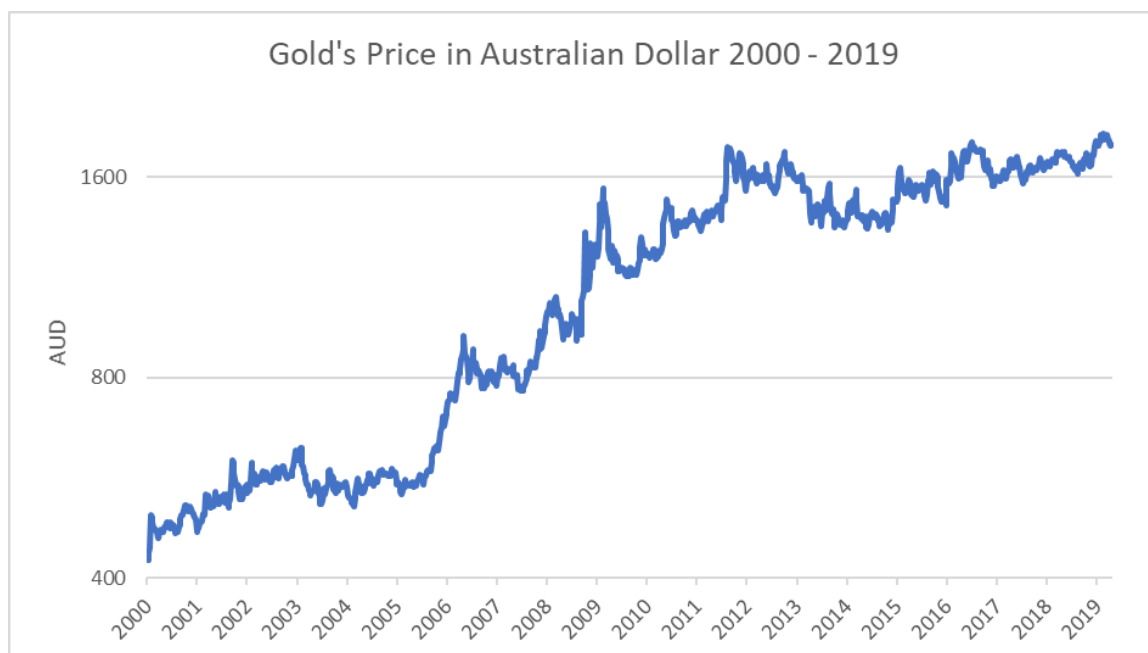


Chart 43. Gold's price in Australian dollar (Investing 2019a; Investing 2019e)

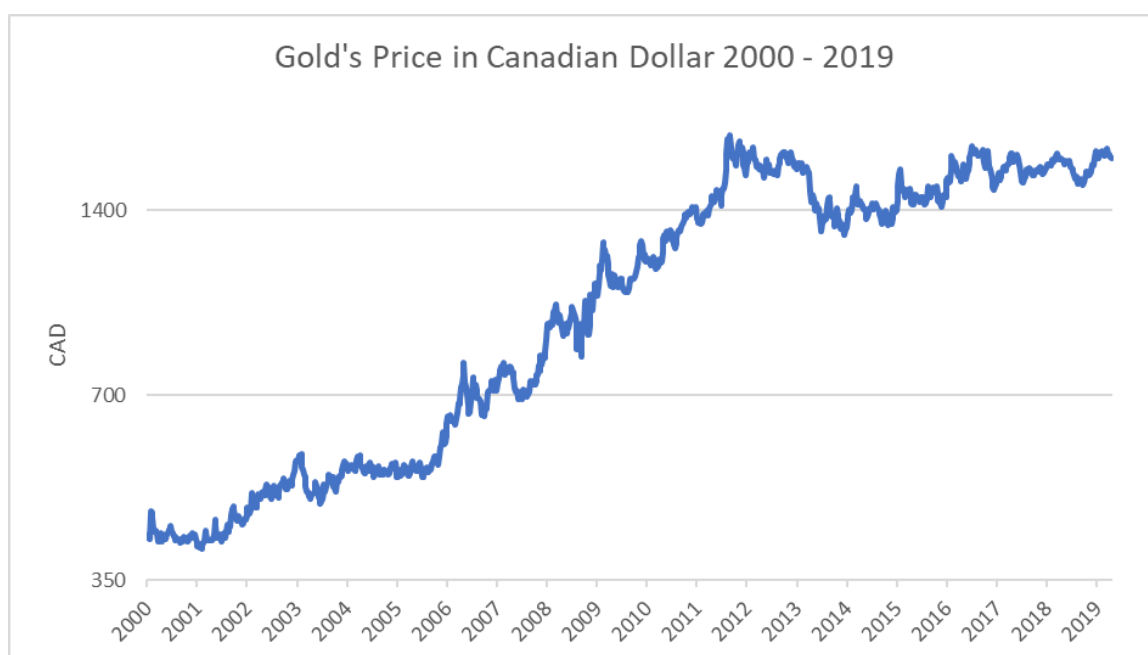


Chart 44. Gold's price in Canadian dollar (Investing 2019a; Investing 2019f)

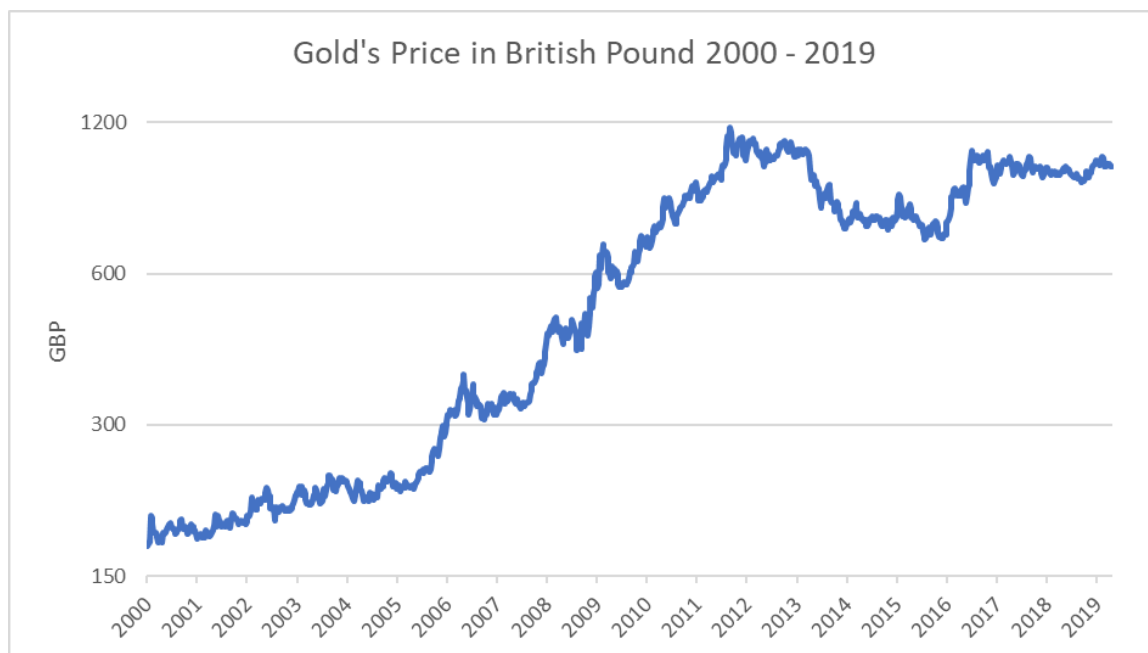


Chart 45. Gold's price in British pound (Investing 2019a; Investing 2019h)

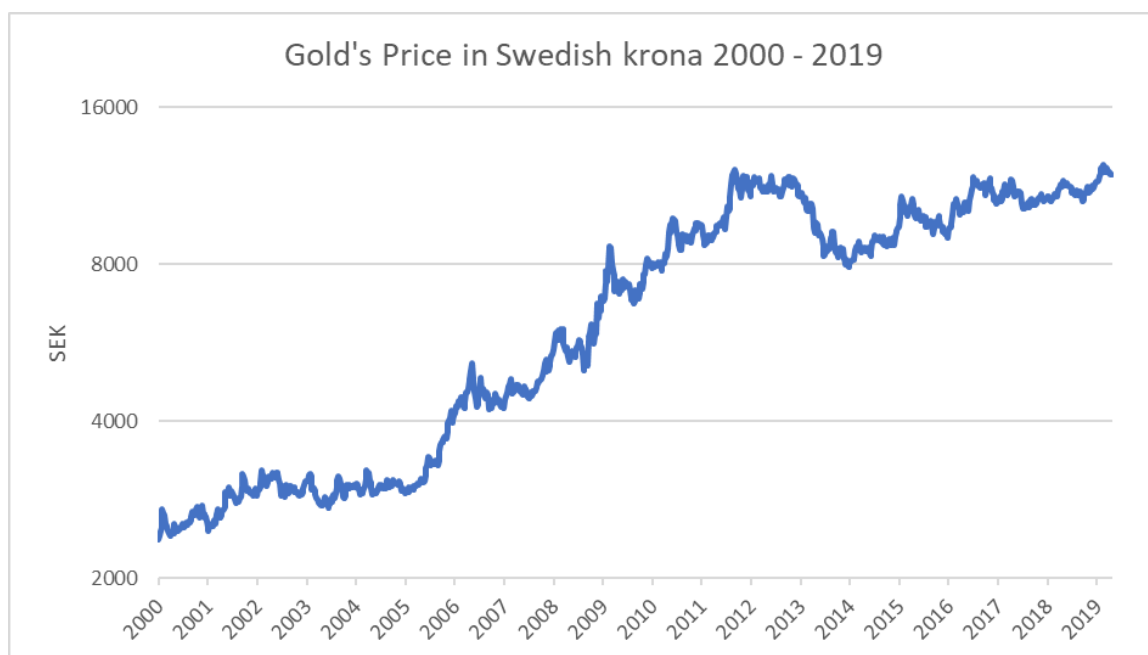


Chart 46. Gold's price in Swedish krona (Investing 2019a; Investing 2019j)

Back on the shorter timeframe gold has been signalling relative strength in many major currencies including the euro, the Japanese yen, the British pound, the Australian dollar, the Canadian dollar and the Swedish krone which contributes towards the case that the next sustained multiyear move in gold will be higher rather than lower. Between 2013 and 2016 gold signalled relative strength compared to the US dollar price of gold in the euro, the Japanese yen, the Australian dollar, the Canadian dollar and the Swedish krone by

producing higher yearly lows during these years. In addition to these currencies, gold is closer to all-time highs also in the British pound.

As a conclusion, the US dollar spot price of gold is currently in a consolidation phase which began in December 2015. The consolidation ranges between 1 045 and 1 375 US dollars and theoretically can break either to the upside or the downside. In other major currencies such as the euro, Japanese yen, British pound, Australian dollar, Canadian dollar and Swedish krone gold has been signalling relative strength relative to the US dollar price of gold which further suggest that the consolidation phase in the US dollar price of gold will break to the upside.

As a whole, the current technical trends in gold are very bullish suggesting that a sustainable move to the upside in the US dollar gold price is on the way after the consolidation phase has finished. Judging by the length of the previous consolidation phase between 1999 and 2002 after the multidecade bear market in gold the consolidation phase should be mature and ready for a breakout. The next subchapter examines the current sentiment environment of the gold market.

Gold Market Sentiment

As was discussed in chapter 3.6.1 sentiment plays a key role in successful cycles analysis. The declining phase of the previous eight year cycle which bottomed in 2015 resulted in a bear market in gold which was likely amplified by market manipulation as discussed in chapter 3.5.1. Compared to the multiyear cycle decline in 2008 the decline between 2011 and 2015 not only lasted longer but was also more destructive for the gold market. Between September 2011 and December 2015, gold prices fell over 45 per cent compared to the 34 per cent decline seen in 2008. In addition to gold prices the decline in gold mining stocks was broadly more devastating in the 2011-2015 bear market compared to the decline in 2008. Between September 2011 and January 2016, the VanEck Vectors Gold Miners (GDX) fell by 81 per cent compared to 2008 when the EFT lost 72 per cent of its value in eight months but recovered the highs of 2008 in late 2010.

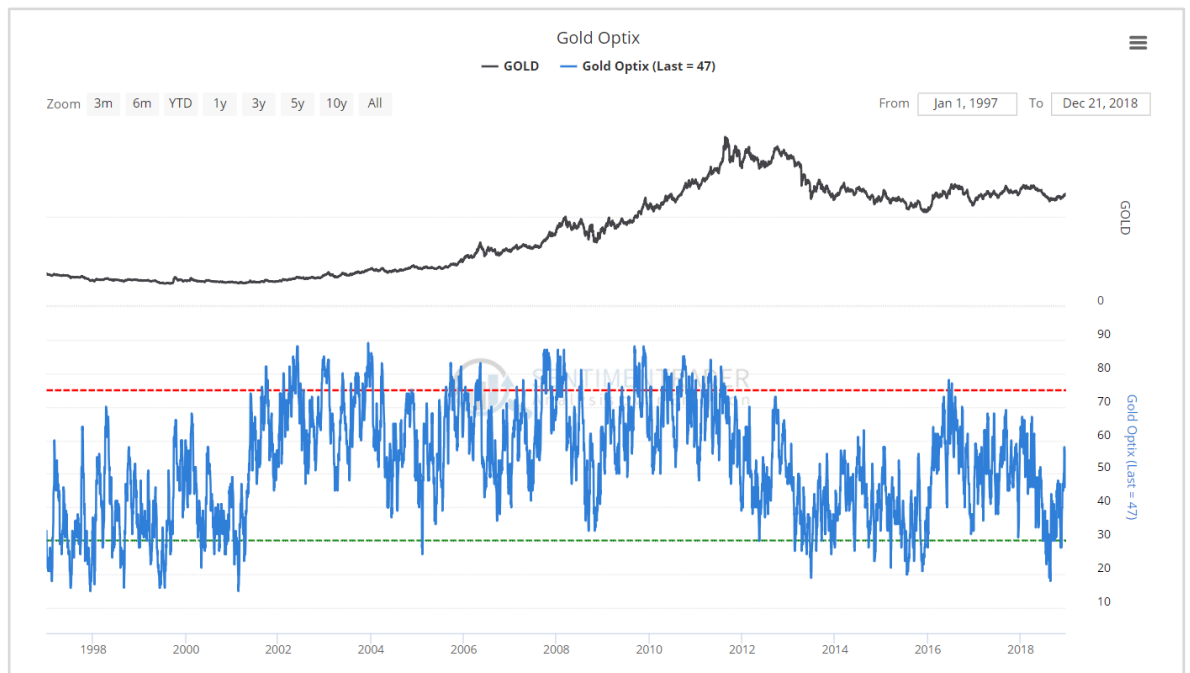


Chart 47. Gold Optix 1996 – 2018 (SentimenTrader 2018b)

Chart 47 presents the SentimenTrader's gold Optix index between 1996 and 2018. As can be seen from the chart, the 2011-2015 bear market resulted in a long period of subdued sentiment until June of 2016 when the Optix plotted its first excessive optimism reading since August of 2011. Sentiment often acts as the powering factor in large moves. When a long downtrend reverses it takes time for the general public to get optimistic on the underlying asset and price rises rapidly in the first months of the move. This was the case in early 2016 when gold prices rose aggressively coming out of the eight year cycle low of December 2015 – a move which totalled 31 per cent in seven months.

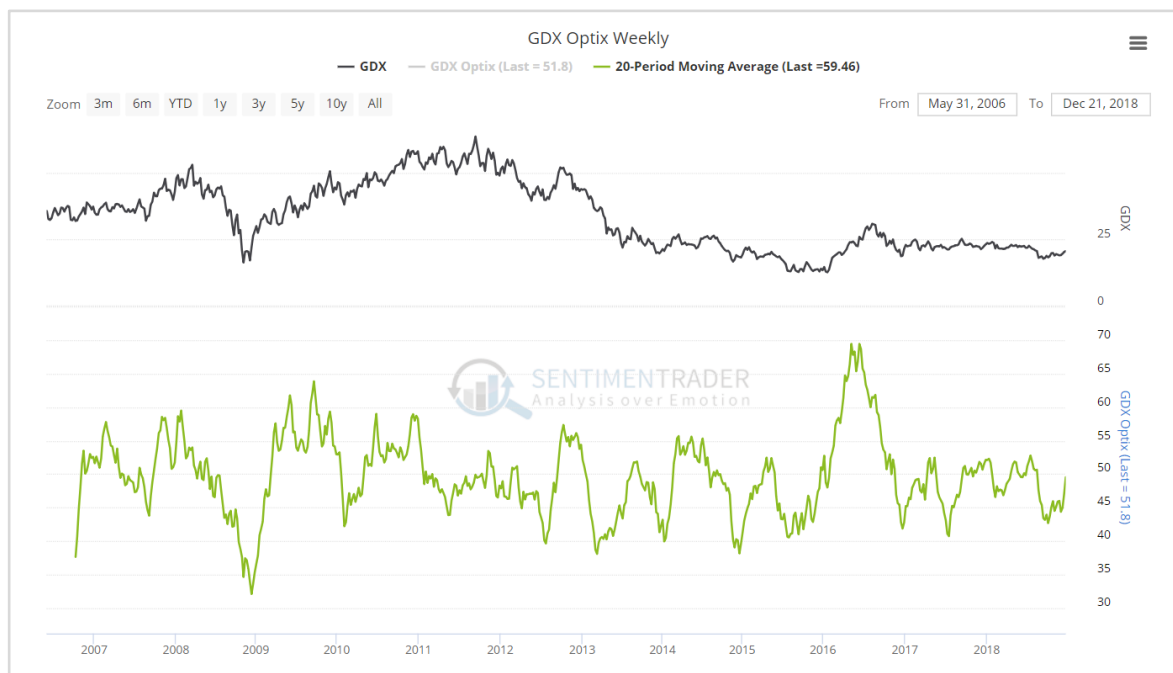


Chart 48. GDX Optix 20 week moving average 2006 – 2018 (SentimenTrader 2018c)

Similar behaviour can be noticed from Chart 48 above which shows the 20 week moving average of SentimenTrader's GDX Optix index between 2006 and 2018. The 20 period moving average of the weekly Optix reading gives further confirmation that the eight year cycle low occurred in December of 2015 as in June 2016 the optimism of the gold mining sector had remained elevated long enough to plot the highest ever 20 period average optimism measured at a reading of 69,41. Plotting such a high figure indicates a larger change in trend which in this case would most likely indicate a multi year cycle low and the end of the gold's bear market.

Although devastating, the 2011-2015 bear market in gold reset the sentiment enough to power a major rise in the price of gold which realized mostly during the first half of 2016 coming out of the eight year cycle low. During this period gold rose over 31 per cent and the GDX mining ETF rose over 156 per cent. After this substantial move gold transitioned into a range between 1 045 and 1 375 US dollars. It is likely that as long as gold remains in this range sentiment will also remain contained. Despite the dampened sentiment between 2016 and 2019 the sentiment environment has changed from a clear bear market sentiment present between 2012 and 2015 to a bullish stance.

Gold's ABC-wave

When examining long-term gold charts there is a clear pattern of ABC-type advances and declines. Whilst the ABC-wave concept is common in other markets as well, gold tends to exhibit the ABC-wave particularly consistently. The ABC-wave is also consistent on

shorter time frames such as intermediate cycle declines. In essence, the ABC-wave consists of an A-wave advance, followed by a shorter B-wave decline and finally a C-wave advance which is often larger than the previous A-wave advance. Vice versa the same can be applied to ABC-declines only so that the advances and declines change places.

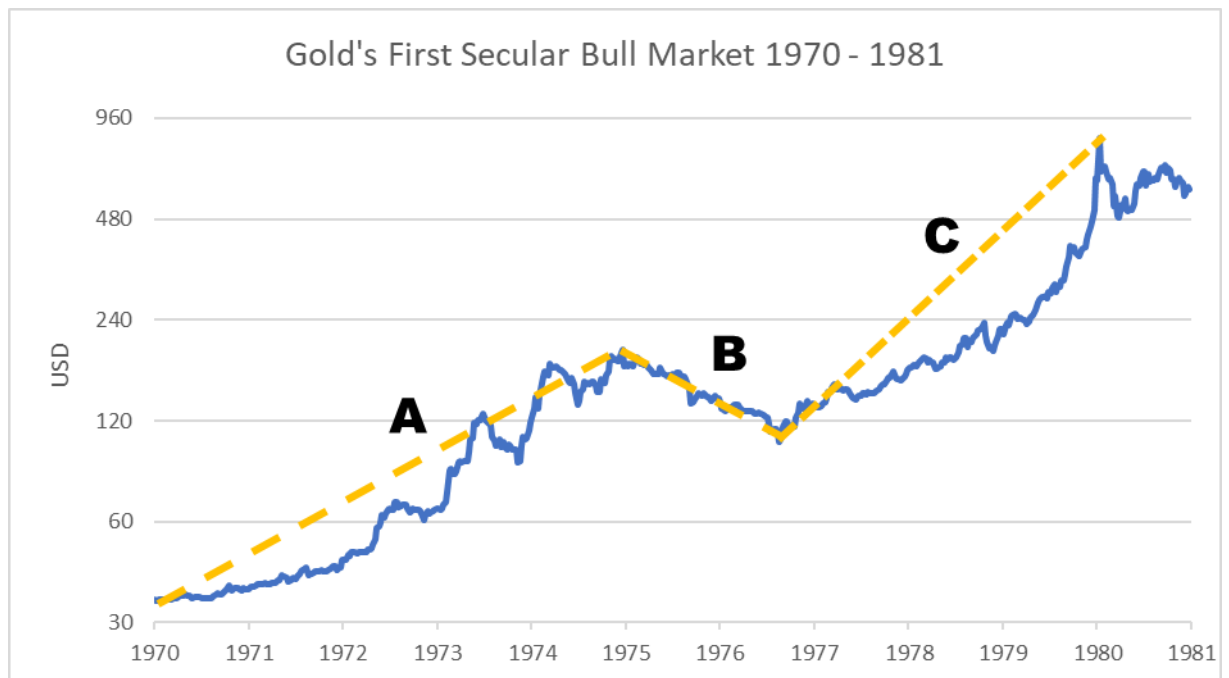


Chart 49. Gold's secular bull market in the 1970s with the ABC-wave (Investing 2019a)

A clear ABC-advance can be detected from gold's first secular bull market between 1970 and 1980. The A-wave advance between 1970 and 1974 totalled over 430 per cent for gold. This was followed by a B-wave decline which erased roughly 50 per cent from gold prices between 1974 and 1976. After the B-wave decline was finished the C-wave advance totalled over 730 per cent between 1976 and 1980. In total gold gained over 2 300 per cent in the whole ABC-wave between 1970 and 1980.

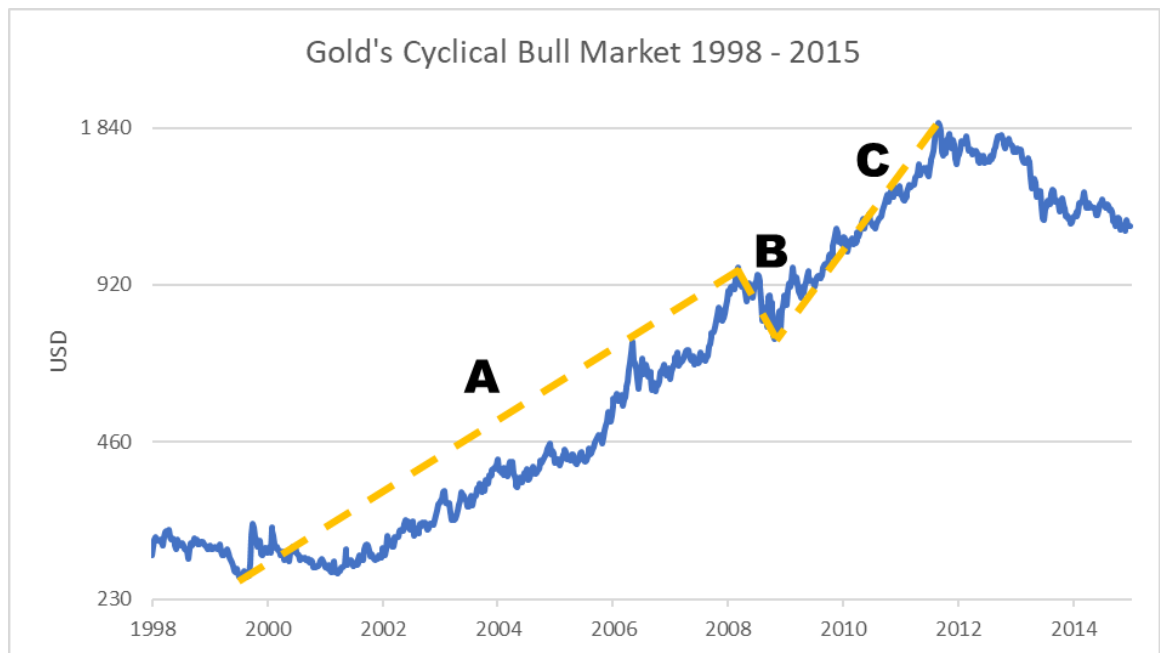


Chart 50. Gold's cyclical bull market in the 2000s with the ABC-wave (Investing 2019a)

An ABC-advance can also be detected from the gold's previous cyclical bull market between 1999 and 2011. In the A-wave advance between 1999 and 2008 gold gained over 300 per cent. In the B-wave decline during the financial crisis of 2008 gold fell over 30 per cent. In the C-wave advance between 2008 and 2011 gold gained little over 160 per cent making the total gain from the early 2000s ABC-wave little over 650 per cent.

Since the B-wave decline in 2008 was just a few months long opposed to the two years in the 1970s and the total gain from the 1999 – 2011 ABC-wave was just 650 per cent opposed to the 2 300 per cent in the 1970s it could well be that an even larger C-wave advance is still underway. When comparing ABC-waves in gold the C-wave tends to be more aggressive compared to the A wave advance which was also not the case between 2008 and 2011. From this perspective, gold looks to have completed an A-wave advance between 1999 and 2011, a B-wave decline between 2011 and 2015 and could now be in the final C-wave advance.

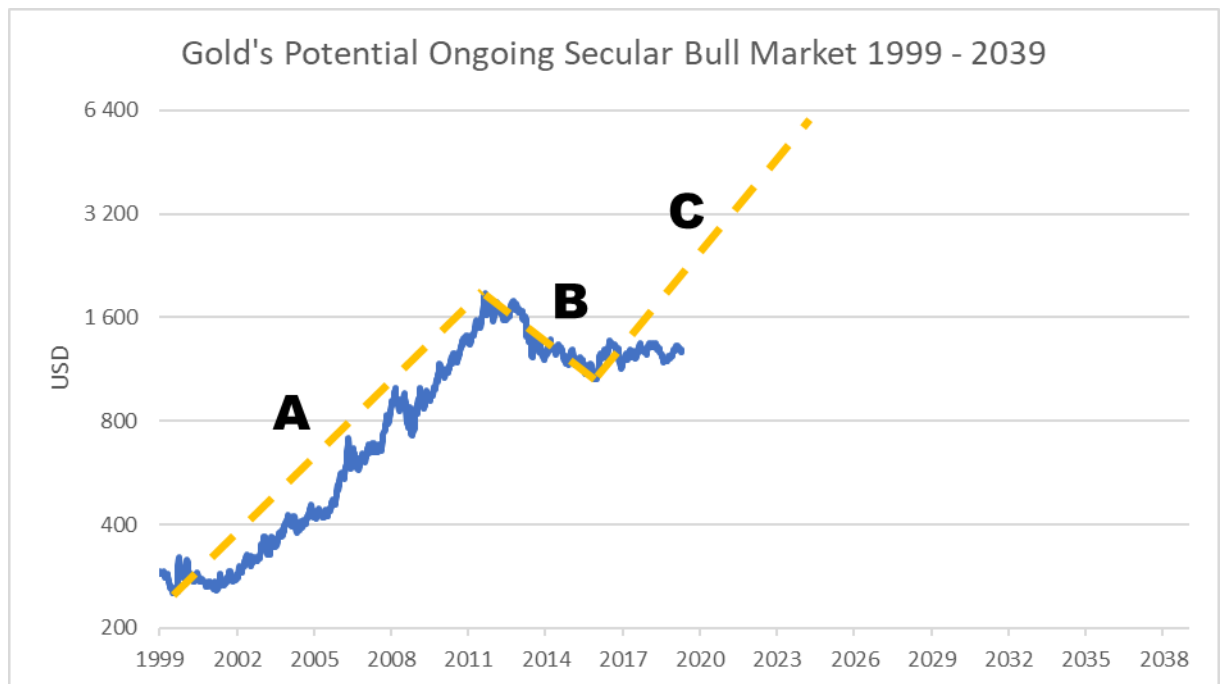


Chart 51. Gold's potential ongoing secular bull market (Investing 2019a)

Gold exhibited the same ABC-wave behaviour between 1999 and 2011 as it did between 1970 and 1980. This could be extrapolated to the present day by saying that gold is in the same situation as in 1983 – at the beginning of a multi decade bear market. However, as was already mentioned, cycles are driven by big picture fundamentals which are currently positive for gold and suggesting that the US dollar index is rolling over and has many years until the next 15 year cycle low. Also the commodity complex is likely to have undergone a three year cycle low in late 2018 which should provide tail wind for gold as well. As a result, inflation is likely to elevate most asset prices over the next few years. This suggests that gold prices are also heading higher and that gold completed a large A-wave advance in the early 2000s, a large B-wave decline between 2011 and 2015 and is now in the C-wave advance – the most aggressive advance in the ABC-wave.

The relative strength of the C-wave compared to the A-wave can be explained by the nature of the advances. A-wave advances tend to be more gradual and sustainable bull market advances whereas C-waves are often characterised by a blow off type bubble top. The definitions of bubbles varies from person to person, but a common definition is over 100 per cent advance in a year or less before the top and a 70 per cent decline after the top. Following this definition, the top in 2011 does not complete the 100 per cent advance rule whereas the 1980 top does. Gold gained less than 65 per cent year over year before the 2011 top which is significantly less than the 240 per cent year over year gain prior to the 1980 top. Judging purely by the price action gold did not complete a bubble in 2011.

On the most speculative level, one could say that gold finished a massive A-wave between 1970 and 1980, a massive B-wave decline between 1980 and 1999 and is currently in an ongoing C-wave which began in 1999. As the C-wave is usually more powerful than the A-wave that would put a target price of over 5 600 dollars for gold before the C-wave is finished. It may seem farfetched at first sight, but an 850 US dollar target price would have seemed completely outrageous in 1971 when gold was at 35 US dollars even though that 800+ figure was reached less than ten years later.

4.2.3 Risks from Cycles Perspective

From the perspective of gold's cycles analysis, there are three potential risks which could lead to further weakness in the US dollar price of gold. In short, these include strength in the US dollar, technical confirmation of a prolonged bear market, and market manipulation. The risks are both presented and counterargued in the following subchapters. The actual effectiveness of the risks for the cyclical outlook are assessed in chapter 4.2.4.

Strong Dollar

While interviewees were unanimous on the opinion that over the next 20 years the US dollar is poised to decline in value Brent Johnson raised a contrasting opinion on the short-term outlook for the US dollar which if realised would mean a large deflationary spike in the United States and would be significantly negative for gold prices measured in US dollars. While most interviewees said that they believe that the US dollar will begin to fall as soon as in 2019, Brent Johnson and James Rogers were rather convinced that the dollar would see a final push before a longer trend lower.

Johnson believes that the US dollar will face high demand over the next couple of years relative to other currencies which means that the US dollar will go up. He argues that the liquidity which has been pushed to the global financial markets via quantitative easing policies conducted all around the world are flooding out of the domestic markets and into the US markets. This is because the US is currently the only large economy in the world conducting quantitative tightening policies by contracting the money supply and raising interest rates while other major economies including for example the eurozone, China and Japan are still conducting quantitative tightening policies ten years after the financial crisis of 2008. Therefore the dollar should in theory benefit from the current setup as it has since February 2018. (Johnson 29.11.2018.)

Johnson pointed out that the reasons for the US dollar to go up are fundamentally wrong and that he agrees that the US dollar's reserve currency status is going to get diluted in

the long term but before that he sees a significant rise in the price of the US dollar. Johnson noted that the US dollar is still considered to be a safe haven asset even though educated experts might disagree on the principle. The safe haven status is due to the high degree of confidence which the US dollar still enjoys on certain level. Johnson views the trust towards the current monetary system as a major long-term price driver for gold, but he points out that the trust towards the US dollar's purchasing power is still high amongst the general population despite what may be said in the media. (Johnson 29.11.2018.)

Johnson considers the strong dollar risk for gold to be timewise limited and bound to the US dollar. He pointed out that since the demand for US dollars will come from other currencies that means that those currencies will depreciate as the demand for the currency falls. (Johnson 29.11.2018.) This also explains why the US dollar price of gold has been subdued relative to other large currencies such as the euro, the Australian dollar, the Canadian dollar and the Japanese yen where, as was discussed in chapter 4.2.2, the price of gold is much closer to all time highs. As the long-term picture remains negative for the dollar Johnson says that it could well be that gold and the US dollar begin to rise together as there is already significant demand for gold in other currencies (Johnson 29.11.2018).

On the contrary, David Brady noted that such a rise in the US dollar would be devastating for other economies around the world. This has realised in certain emerging economies including Argentina and Turkey where domestic currencies have fallen significantly against the US dollar. Brady is very sceptical towards the strong dollar scenario as he emphasized that the crash caused by the dollar would spread quickly into the US causing immense financial stress. (Brady 22.11.2018.)

Most of the interviewees see the dollar index declining over the next few years. The most common reasons for this view were the depleting reserve currency status, the expected shift towards more dovish monetary policies in the US coming to 2019 – which has played out as of April 2019 – and the cost of servicing the US national debt which is directly correlated to interest rates and via that to the price of the dollar. Although considered generally unlikely, the case where the dollar would experience a rapid revaluation against other currencies would likely be highly deflationary for the US, devastating for the world economy and most likely very negative for gold at least in the short run and in US dollar terms.

Technical Confirmation of a Bear Market

From a cycles analytical point of view, a break of the 2015 eight year cycle low would be a confirmation that the bear market did not end in 2015 but rather that the bear market is still ongoing. This would mean that the current eight year cycle topped on the first year

which in turn would mean that gold should see many years of lower prices coming until the next eight year cycle low is due in late 2024 or early 2025. However, this scenario is not very likely under free market conditions for a number of factors.

As was discussed in chapter 3.3.3 gold prices should find major support at prices close to or below 1 000 since gold mining is already barely profitable for many large gold producers. The weighted average AISC for the top 9 gold mining companies is about 890 USD which puts a natural support for gold prices over the long run. Considering the poor condition of the junior gold mining industry as ore grades have deteriorated the mining industry is not prepared for lower gold prices. If gold prices were to fall below 1 000 or even 900 US dollars the supply of physical gold would be quickly jeopardized as miners would scale down unprofitable operations and falling prices would further raise the bar for new exploration projects.

Another factor which does not suggest lower gold prices below the 2015 low is that as was discussed in chapter 4.2.2 a multiyear cycle top in less than a year would be a statistical anomaly. This does not mean that it would be an impossibility for the 2015 low to fail but it is highly unlikely at least before new highs above the 2016 high. It could be that gold produces a false breakout above the 2016 high at 1 375 USD setting the cycle top mature after which gold would fall and break the 2015 lows. However, breaking of the 2015 low would produce yet more issues.

As was explained in chapter 4.2.2 the commodity complex produced a generational low in 2016 with high certainty. Oil prices were below most production costs around the world which is unsustainable for extended periods of time due to world's continues need for oil. If gold were to fall below the 2015 low that would most likely draw other commodities including oil much lower – even below the 2016 lows. The same thing happened in 2013 and 2014 when gold and oil prices fell drawing most commodities with them. If the CRB were to follow gold to new lows below the 2015/2016 lows this would mean a highly deflationary period which does not fit with the recent monetary policies of central banks and the US dollars fundamentals which point to lower lows in DXY and thus higher prices in everything measured in US dollars – inflation.

Manipulation

Another issue which cannot go unnoticed is the possibility that market manipulation picks up once again and gold is artificially suppressed lower triggering more selling pressure and further decline in price. Manipulation could drive the price lower in the short run but with

the physical demand-side expanding in the gold market and supply-side likely to contract manipulation should cave in at some point to larger fundamentals.

Gold is not the only precious metals market being manipulated and artificially suppressed. From the lows of August 2018 to the highs of March 2019 palladium prices rose over 90 per cent. Palladium being a niche market it is relatively easy to control and manipulate with enough capital. The small size of the physical market also makes the palladium market vulnerable to short squeezes resulting from short supply of the physical metal. In the beginning of 2019 the palladium futures curve showed a steep backwardation which is clear characteristic of physical shortage. In backwardation spot prices are higher than futures prices meaning that investors and palladium users are willing to pay a higher price to receive the physical metal right now than they are willing to pay to receive it later.

Most of the time commodity prices are in contango meaning that investors are willing to pay a premium to receive the commodity at a future date rather than immediately. Contango is primarily due to storage costs of the physical commodity. This means that futures with longer time until expiration are more expensive than futures with shorter time until expiration. Since the palladium market was in backwardation it signalled that the physical metal is hard to get and thus there was a major surge in price in a short period of time.

If palladium prices were allowed to trade freely without the doubt of market manipulation the market would have begun to price in a potential supply shortage well in advance. As of April 2019 the best estimate is that the same market operators which have been manipulating the palladium market knew the underlying situation and the potential shortage. As a response they pushed the market price of palladium as low as they could via futures and potentially other derivatives while at the same time increased their long exposure to palladium in other instruments. In August 2018 they manufactured an undercut to the July low in palladium and unloaded their short positions leaving their exposure long. This is pure speculation, but it would be the logical chain of events if one were to manipulate the palladium market.

There is nothing stopping the paper gold market – referring to the derivatives market – from being manipulated lower apart from physical demand which could at the end break the manipulation and in an extreme case break the paper gold market itself. The breakdown of the market would mean that the market would either cease to operate at command from the exchange operator which would be response to irrational pricing of the derivatives traded on the market relative to the spot market. Or the price on that market would become irrelevant in the eyes of traders who do not believe that the counterparties

are able to deliver physical upon request as they are obligated during normal market conditions. This would render the derivatives market irrelevant and collapse that particular market. The collapse of any major gold trading hub would be a massive blow to the credibility of the whole gold market and physical gold prices would most likely soar rapidly in response to the fall of a major gold market.

As a conclusion considering the inelastic nature of gold's supply, solid demand fundamentals and the structure of gold derivatives markets gold market manipulation is most likely a short-term obstacle. As was seen in palladium, extended manipulation can in extreme cases break the market as has happened to some extent to the palladium futures market. The weighted average AISC of large gold producers also provides support for gold's price in this case as well.

4.2.4 Conclusion on The Second Scenario

From a cyclical analytical perspective the necessary drivers for gold to be in a bull market are in place. This should mean not only higher yearly lows as we have seen since 2015 but also higher yearly highs which are still yet to come as of April 2019. All in all the cyclical outlook including both fundamental and technical sides is supportive for higher gold prices coming forward at least until the next eight year cycle low.

The risks from the cyclical perspective are partly fundamental and partly market related. Although the risks outlined in the previous chapter are plausible, they remain as short-term risks unlike for example the risk of technological breakthroughs mentioned in chapter 4.1.3. The most considerable risk seems to be the strong dollar theory but then again, its effectiveness is also timewise very limited as gold would most likely begin to rise with the dollar not long after a major move in the US dollar – and by a major is meant more than what the dollar managed to move in 2018.

It also seems that the dovish stance taken by the Fed is also going to hurt the dollar because the Fed went from four rate hikes in 2019 to zero rate hikes in 2019 in less than six months due to extreme volatility in the US stock market. With the dollar remaining as high as it was back when the Fed expected four rate hikes in 2019 the markets have already priced in more tightening than what has been and will be delivered in 2019. This means that the downside risk for the US dollar from a fundamental perspective has gone up while the upside potential in the US dollar has been cut down at least until the Fed resumes its hawkish stance from 2018.

If the US dollar entered another cyclical bear market in 2017 it is likely that the dollar will not find a final bear market low before 2024 or even 2027. This should provide the necessary conditions for gold to break the all time highs which hold at roughly 1 900 USD. The eight year cycle in gold could stretch a bit further as the previous eight year cycle was a little shy in terms of length. This means that the next major multiyear cycle low in gold is due sometime in late 2024 or even a few years later. If cycles hold true, the target price for gold should be well over 5 000 US dollars over the next 20 years and most likely within the next ten years. It is also important to keep in mind that if and when gold transitions into a bubble it can move over 200 per cent in a year or less. This makes putting a target price for gold extremely difficult, but the 5 000 US dollar target is conservative.

The target price could be reached either during this current eight year cycle or during the next. It all comes down to the US dollar and its fundamentals which are rapidly deteriorating. The tensions which the US dollar is facing are discussed in depth in the next scenario which focuses on the status of the global monetary system and discusses a severe monetary reform scenario which could take place over the next 20 years. If the major crisis in the US dollar unfolds during the next global recession – which is statistically overdue as of April 2019 – it should mean that gold is in for a major leg up within the next few years.

As a conservative conclusion on gold's cycles analysis, gold should move generally higher over the next five years. If global economic conditions continue to deteriorate gold's next eight year cycle should also produce new all time highs even if the current eight year cycle fails to produce new all time highs. From a cycles analytical perspective, gold has limited downside especially in other currencies apart from the US dollar as many other currencies are showing relative weakness against the dollar. The cyclical outlook for gold over the next ten to twenty years is very bullish and supportive for much higher prices in all major currencies but the short term US dollar price of gold does have some risks involved.

4.3 Third Scenario: Monetary System Reform

The third scenario presents an extreme scenario of a global currency crisis which will have an immense effect on the global currency system and the potential role of gold in this equation. The movements which are currently taking place to dilute the global dollar standard – a subject which was briefly discussed in chapter 3.1 – as a supportive thesis for the end of US dollar hegemony in one way or another, will be examined. Out of all the scenarios discussed in the report, this scenario is the most extreme yet not as farfetched as it might seem at first glance.

The scenario is based on the fact that many countries are abandoning the US dollar as medium of exchange and are looking for new alternatives. This combined with a global economic slowdown and a looming recession is likely to spark a US dollar currency crisis which could result in a global monetary system reform. Although thrillingly titled the third scenario is sadly an ongoing reality considering the prevailing geopolitical tensions and as was discussed in chapter 3.1 something that is far from new to modern humanity.

Over the past 150 years, the world has renewed its monetary system thoroughly four times and the average lifespan of a monetary system has been less than 40 years. The current global dollar standard has been the standard since August of 1971 which means that the current system is 47 years old and therefore statistically due for a change. To grasp the scenario provided in this chapter it is advisable for the reader to go through the whole chapter 3.1 titled 'The Monetary Aspect of Gold' thoroughly. This scenario is merely a continuation of monetary history and a thorough examination of the causal factors.

Chapter 4.3.1 discusses the foundations for a global currency crisis which seems more inevitable day by day. Chapter 4.3.2 presents gold to the global currency crisis equation by examining how gold could be used to stabilize and prevent a full-blown currency crisis. As was discussed in chapter 3.1 the idea of using gold as the foundation in a currency system is far from new. Chapters 4.3.3 and 4.3.4 discuss the problems and tensions which support the idea of a brewing global currency crisis. Since the report is fundamentally a gold market analysis chapter 4.3.5 discusses the risks for gold prices in the event of a global currency crisis and what type of solutions could prevent gold from benefiting from it. Finally, chapter 4.3.6 provides a short conclusion on the third scenario.

4.3.1 Global Currency Crisis

The foundations for the upcoming monetary system reform were laid back in 1971 once the world transitioned into a fiat based monetary system. Technically the Bretton Woods agreement in 1944 paved the way for the 1971 Nixon shock, but the Bretton Woods system failed primarily due to US' lack of discipline which appeared as deficit spending which escalated in the 60s and 70s. Fiat-based economies tend to progress well at first due to theoretically infinite capability of issuing debt which can be used for investments. The problem with fiat currency based systems is that they tend to fail upon economic distress. With mere trust for the currency's purchasing power backing up the system and with unlimited debt levels fiat based systems tend to fail once trust towards the debt issuing party – usually the government or a central bank type of operator – is lost.

Crises and changing environments have unified the monetary system reforms in the past. The 1870s classical gold standard reform was the result of unification efforts after long and brutal wars – to create trust in the unified system. The gold exchange standard coincided with the beginning phases of the First World War – a shock in itself – and the Bretton Woods agreement was signed at the end of the Second World War – once again to unify not only people but nations. The currently prevalent global dollar standard was the result of a runaway inflation crisis in the US although the system was created merely to control gold flows out of the US and so to control US inflation.

Due to the United States' unique position in the global monetary system and the reasons briefly outlined in chapter 3.1 many of the world's largest nations are dissatisfied with the current US dollar-based system. Countries are actively looking for alternatives which would better endorse their economic freedom. However, other fiat based solutions are just as vulnerable to the mistakes which were made under the current system – overleveraging the standard of living and indebting the system. The current dollar rivals including the euro, the Russian ruble and the Chinese yuan are fundamentally in the same category with the dollar.

The key in every currency system is public trust towards the system which is achieved mainly via monetary policies and or the backing of the currency. From a historical perspective, fiat currencies have allowed large scale public spending programs which have at the time been very stimulative towards the economy and the standard of living. This is often seen as a positive aspect of fiat currency systems. However, all fiat currencies preceding the current global fiat based system have all ceased to exist. Throughout history from the ancient Roman denarius, 11th century Chinese “flying money” as they called it to 18th

century French, Weimar Germany, Zimbabwean dollar and the Venezuelan bolivar most if not all fiat currencies have ended in high inflation and the collapse of the currency.

Hyperinflations are caused by the collapse in trust towards the system. The trust in the US dollar is quickly evaporating on the government level but as Brent Johnson pointed out in the interview trust amongst the public is still alive and well. This is mainly due to misunderstanding and lack of education in economics. It is not uncommon to come in touch with people who still believe that the US dollar is backed by and convertible to gold. In a system where the public has been distanced from the fundamentals of the monetary system, this is possible. In the late 19th century it would have been unheard of in the western world to accept fiat money as a means of exchange. The dilution of the concept of money was advanced rapidly during the world wars and the 1970s “extraordinary and temporary methods” distanced the public from the principles of sound money for good. It is merely a matter of time for the trust to erode in the eyes of the public as well. This could take place in many ways one of which would be another global financial crisis and a recession.

A recession is defined as two consecutive quarters of economic contraction measured by GDP growth. In January 2019 Italy slipped back into recession territory for the third time in the past decade. Italy is often falsely compared to Greece in essence that since Greece was not enough to collapse the world economy during the euro crisis in 2012 neither will Italy this time. However, Italy's economy is almost ten times as large as Greece's. Italy's economy is the world's 9th largest whilst Greece's economy is on the 51st place (World Bank 2017a). A recession in Italy means serious problems for the whole EU. The world's fourth-largest economy, namely Germany, managed to dodge a recession by printing 0,002 per cent growth on the fourth quarter of 2018 after a contraction of 0,2 per cent in Q3 of 2018 (Bloomberg 2019a).

The slowdown does not limit to Germany and Italy. The global economy has been slowing all across the world. Countries including, but not limited to, France, United States, Netherlands, China, Australia, Canada and Turkey have all seen their annual GDP growth rates sliding over the past year. Of these countries, Turkey entered a recession in 2018 and Canada as well as Australia both signalled quarterly growth at or below 0,2 per cent. The global slowdown has also infected to the US which quarterly growth fell from 4,2 per cent in Q2 to 2,2 per cent in Q4 of 2018. This global synchronized slowdown in Q3 and Q4 of 2018 was followed by a stock market selloff which sent the S&P 500 stock market briefly in bear market territory – a correction of more than 20 per cent from the previous high. The economic slowdown also has had an effect on the Fed's economic policy.

In the Federal Reserve's FOMC meeting in March 2019, the Fed signalled a yearlong interest rate hiking pause for the Federal Funds Rate which is at the time of writing held between 2,25 – 2,50 per cent as was set in the December 2018 Fed meeting (Federal Reserve 2019). Taken to account that the Fed had raised interest rates for a total of eight times over the past two years a yearlong pause would be quite unusual at least during the past 30 years when central banks have claimed more attention in the financial markets. The Fed's dovish stance – loose monetary policy – is a clear sign of caution. At over ten years long it would not be farfetched to argue that the economic cycle is close to a top and that the Fed's dovish tone and a supposed yearlong pause are signalling the top for the current rate hiking cycle. This would mean that the next move from the Fed would be a rate cut. As a matter of fact, the White House economic advisor Larry Kudlow has already called for a 50 basis point – 0,50 per cent – rate cut and said that the Fed has gone too far with the rate hikes (CNBC 2019).

Before the Dotcom bubble burst interest rates in the US were at 6,5 per cent and before the crisis of 2008 interest rates were at 5,25 per cent whilst now interest rates seem to have topped at 2,5 per cent. 250 basis points leave the Fed into an extremely tight spot as they have little room to stimulate the economy if there is a recession in the near term future. If indeed the US is unable to increase their benchmark interest rate and the economic cycle is topping that would mean that during this economic expansion – which is the second longest in US history – short-term interest rates topped on the lowest level in over 60 years prior to a recession. With yield curve inversions – longer-term maturities yielding less than shorter-term maturities – taking place between 1M3M, 1Y5Y and even the 3M10Y (US Treasury 2019) the markets are already pricing in a rate cut rather than a rate hike contrary to what the Fed is currently signalling.

Another issue in addition, to the low interest rates is the central bank balance sheets which have been elevated around the world to multiples. The Fed balance sheet started from around 800 billion US dollars and by the end of QE 3, the balance sheet had grown to 4 500 billion dollars. The original plan of the Fed was to normalize the balance sheet by letting the debt obligations to mature after which that money would cease to exist and ultimately the balance sheet would normalize to well below 2 000 billion. In the same Fed meeting in March 2019, Jerome Powell noted that the balance sheet reduction labelled as quantitative tightening (QT) would be finished in September of 2019 (Federal Reserve 2019). At the current rate of QT that would leave the Fed's balance to slightly over 3 800 billion dollars – nowhere near the normalized level of less than 2 000 billion.

The balance sheet issue is even larger in other economic areas such as the eurozone, Switzerland and Japan which continue QE at the time of writing and are far from beginning QT. These areas are also far behind the Fed on interest rates. The corresponding rate to the Federal Funds rate on the eurozone is currently set to zero. In Japan the rate is at -0,1 per cent and in Switzerland, the corresponding rate is at -0,75 per cent (Trading Economics 2019a). As a matter of fact, the United States currently holds the fifth highest interest rate out of all 34 OECD members coming short only 50 basis points to Chile, 200 basis points to Iceland, 575 basis points to Mexico and over 20 percentage points to Turkey (Trading Economics 2019a). In Mexico, the inflation rate is at four per cent (Trading Economics 2019b) and Turkey is in the midst of its own currency crisis.

Considering that the US is on pause with its interest rates after the second longest expansion in the history of the US and that economic growth is slowing around the world with some large nations already in recession a global economic slowdown including a global recession seems plausible over the next few years. The problem is that central banks have little room to lower interest rates from the current near or sub-zero levels. During the 2008 financial crisis rates were cut to the current levels and as that alone was unable to stop the meltdown quantitative easing followed. If a recession were to happen over the next few years it would be a necessity for central banks around the world to result in quantitative easing policies.

Fed's QE between 2008 and 2014 did not result in large scale loss of confidence towards the dollar. This was primarily due to the uncertainty revolving around the QE policies. QE was seen as new and exceptional, something that was necessary to hold the financial markets intact. However, at the very core QE is diluting the purchasing power of the currency already in circulation. As more currency is rapidly issued the currency in circulation devalues. If the Fed and other central banks around the world resolve back to QE – which currently seems inevitable due to low interest rates – it is not certain how the markets will react. Since interest rates are so low next round of QE will have to be much larger than the previous round of QE to create the same level of stimulus. Now that QE is no longer seen as exceptional it is likely that more people will question the ethics around QE and more people will question the trustworthiness of the dollars purchasing power. As the situation is similar or worse in many other large currencies including the euro and the Swiss franc the same trust issue applies to these currencies as well. Central banks will have to conduct a massive devaluation program which is likely to cause large scale inflation – loss of purchasing power. The whole progress is likely to be linked to a global currency crisis.

A global currency crisis was avoided in 2008 by sacrificing central bank balance sheets by buying assets thus propping up asset prices and generating trust towards the whole monetary system. With interest rates at historically low levels all around the world, there are not many central banks that can do other than buy assets and so to increase their already overextended balance sheets. The problem with this approach is, that based on history when countries have overextended their money supplies high inflation has followed.

The combination of increasing the money supply and simultaneously global efforts to get rid of US dollars is a bad recipe for the US dollar, especially in a global economic downturn. With no other place to run the liquidity will return to the US asset, actual consumer prices and ultimately to the somewhat falsely assembled consumer price index. At this point, the US will face similar runaway inflation as in the 1960s and 1970s when domestic dollars saw an intense increase in numbers from countries in Europe claiming gold for dollars. This time the dollars will be handed over without the convertibility of gold simply from the fact that countries outside the US do not need the dollar. Whilst the Fed has stated that quantitative easing could still be used in form of bailouts the ECB, on the other hand, has signalled that bail-ins are the primary tool in case of a widespread financial crisis.

The bail-ins differ from bailout so that instead of a rescue performed by the central bank and ultimately the taxpayers, companies and banks are themselves responsible in case of a crisis. This means that instead of the central bank handing over monetary stimulus the shareholders, debtors, creditors and customers take the hit. This in turn means that the company or the bank in trouble declares a bankruptcy, shareholders lose their investments, debtors are asked to pay their loans immediately – most of which are utterly unable to do so (think about an average mortgage debtor) –, deposits from depositors such as ordinary citizens and corporations are claimed by the bank and lastly the creditors are paid from the little that is gathered by the debtors and deposit.

In case of such scenarios governments around the world reassure bank deposits to a certain extent. This is often called Governments Deposit Insurance Scheme or something similar. This means that in case a bank goes bankrupt the government uses taxpayer money to pay the depositors until a predetermined amount which could be, depending on the region, 100 000 euros for an example. Although the amount may sound large it is insufficient for small and large business owners who have a business to run. Bank closures also mean payment issues as credit and debit cards of the bank cease to function and ATM's are no longer serviced by the banks. This means that as the demand for cash increases rapidly governments issue daily withdrawal limits on ordinary citizens on the ATM's which are still functional.

In addition, in a large scale bail-in program where multiple large banks are allowed to fail governments need to quickly gather money to pay back depositors in order to fulfil the obligation posed by the deposit insurance scheme. This would inevitably lead to large scale bond issues as governments are more indebted than ever and certainly unable to cope with their obligations. Since the financial markets would already be in distress in such a global event the bonds would need to be financed by another market operative – a central bank – turning private sector bail-ins into public sector bailouts.

Bail-ins are a remote concept for many, but examples of large scale bail-ins can be found as near as from 2013 when the ECB issued a bail-in program to Cyprus with somewhat devastating consequences. Cyprus has tight economic relations with Greece and as a result of the eurozone crisis in 2012 Cyprus got into deep trouble. The banks in Cyprus fell to the brinks of collapse due to money flowing out of the banks and out of Cyprus. As a result the country's second-largest bank, Laiki Bank, was closed, shareholder capital was written off and uninsured deposits of over 100 000 euros were effectively lost in order to meet the bank's liabilities (NGTV 2018).

During the crisis capital controls were issued in both Greece and Cyprus including a monthly transfer limit of 5 000 euros without permission from the Central Bank of Cyprus as well as a withdrawal limit of 300 euros per day in Cyprus (Financial Times 2013). Although the eurozone's stance is with bail-ins instead of bailouts it is unlikely that the ECB would be able to implement such measures across the whole eurozone if some of the region's largest banks such as Deutsche Bank were to collapse. This in turn means that bailouts and currency devaluation are likely consequences for further European crises.

History shows that in a currency crisis the typical outcome is the collapse of the value of the currency. Over the past few years there have been multiple currency crises in the emerging markets. Zimbabwe, Argentina, Turkey, Iran, Brazil, Syria, Ukraine and Venezuela are just some of the countries which have witnessed high inflation and the collapse of their domestic currency's purchasing power over a short period of time. Currencies are easy to devalue but controlling the devaluation or revaluing a currency is much more difficult. Although these countries are all emerging economies global hyperinflation should not be ruled out as the same principles apply to major economies when it comes to governments excessive deficit spending and currency issuance.

With the global economy heading into a recession based on latest economic data from the US, Europe, Australia and China, central banks have little room to lower interest rates and

thus the next recession is likely to be followed by another series of QE further eroding the reliability of the currencies in question. With cracks in emerging market currencies such as the Turkish lira, the Argentinian peso and the Iranian rial the odds of a currency crisis spreading into more emerging market currencies and from there into some larger currencies is also elevated. Therefore the next monetary system reform will most likely take place during a currency crisis in an effort to create stability and trust towards a failing globally established fiat monetary system.

Strength in the US dollar in 2018 led to the devaluation of many minor currencies around the world. The weakness in smaller currencies has in turn led to new all time highs for gold prices in many parts of the world. This is true in all of the previously mentioned countries suffering from high inflation as well as for Australia, Sweden, Norway, Mexico, Colombia, Indonesia, Pakistan and South Africa just to name a few. Although the US dollar has enjoyed rigid demand over the past five years there is no fundamental reason for the US dollar to remain as the world's dominant reserve currency and thus the dollar is likely to be one of the biggest losers during the next global crisis. The next chapter discusses the potential implications of gold to stabilize a global currency crisis.

Whilst generally more on the modest side compared to other interviewees Jan Von Gerich mentioned in his interview that there are lots of seeds for the potential crisis from political and economic perspectives with destabilizing factors such as the end of the current growth cycle and uncertainty in central bank policies on the rise. Von Gerich sees the currency market instability and volatility in the currency markets as a continuing and intensifying trend over the next few years. (Von Gerich 11.12.2018.)

Despite the instability, Von Gerich does not see an outright currency or debt crisis as an acute issue for the US dollar. Von Gerich noted that the question from an international US government creditor in such a debt crisis would not be whether the debt gets paid back but the value of the US dollars used to pay the debt back. In the interview, Von Gerich pointed out that the combination of the dollars diluting reserve currency status and the increasing debt burden will reach an inflexion point where a debt crisis is imminent. From his point of view, the US is not yet close to such point but Von Gerich does not exclude the possibility that such debt crisis could reach the US over the next 20 years. (Von Gerich 11.12.2018.)

The global economy faces major obstacles over the next 20 years and due to the US' abusive use of the dollar over the past 50 years, the US dollar's reserve currency status is on the line. With central banks tied to resolving into quantitative easing once an economic

downturn comes, they will risk the chance of runaway inflation – a problem much harder to overcome compared to deflation. If the dollar were to slump into high inflation other fiat currencies would also be in jeopardy. This is where the third scenario comes from – the potential collapse of the international monetary system over the next 20 years. If history holds true, gold could have a central role in the next monetary system.

4.3.2 Gold's Status in The Next Monetary System

It would be hard to believe that all governments around the world would be oblivious of the prevailing economic environment and the potentially looming global currency crisis. This means that there should be some evidence of governments taking action towards minimizing the impacts of such a tail risk event where the US dollar becomes potentially completely worthless due to hyperinflation. The odds of hyperinflation contagion to other fiat currencies would be high and the spreading would happen quickly due to the high speed at which information moves.

The Basel III is a part of a four-stage regulatory framework agreed and signed by the Basel Committee on Banking Supervision (BCBS) which composes of 45 members which include central banks and bank supervisors from 28 jurisdictions. Essentially the agreement is a global set of guidelines to assess bank capital adequacy, stress testing and market liquidity risk. The agreement is intended to strengthen banks by ruling the bank liquidity and leverage standards.

Interestingly the Basel III qualifies allocated gold bullion as a risk-free asset for banks parallel to government bonds rated from AAA to AA- (BIS 2017). The same status is not shared by any other commodity and is only given to allocated gold bullion with an exception label. Although it is impossible to determine without transcripts of each BCBS meeting the addition of gold was probably demanded by the nations accumulating gold – China and Russia. As was mentioned in chapter 3.1.2 the BIS has also been increasing its gold reserves over the past ten years. This is one of the visible steps taken by governments.

Historically gold has proven to be a stabilizing element to monetary systems. It is important to note that the classical gold standard did not fail but instead it was deliberately unwound. This is the case with most gold standards seen in history. Gold standards limit the public sector from expanding without sufficient economic growth. This is not an issue at the early stages of a country when economic growth is plentiful and money pours into the country in the form of foreign investments and international sales. The problem is that the public sectors habit of spending remains even once the economy sees a prolonged slowdown. This is the exact case in Europe, the US and other western countries as

growth has been sluggish and yet government spending has spurred lots of public debt – which these governments are unable to service even in a globally low interest rate environment.

After a currency crisis has swept through a nation the result often is a return into a backed currency system. Throughout history, gold has provided the most stable backing for currencies and whilst the currency could be backed by oil or other commodities gold is often selected due to its scarcity and other unique properties discussed in chapter 3.3.1. The price of gold has to be fixed to the currency so that the fixing does not create excessive inflation nor excessive deflation in other prices such as assets and consumer goods. In the modern world, if gold were to be once again remonetized into the globalized monetary system, the price of gold should be much higher than 2 000 dollars per ounce.

J.P. Morgan said in the early 1900s that “Money is gold, and nothing else” (Library of Congress 2006). This is often misrepresented as if J.P. Morgan had said “Gold is money, and everything else is credit” which is pretty close to what he meant by the actual phrase when examining the context and considering the way people spoke in the early 1900s. Gold is money, and everything else is credit is true in the essence that in a fully gold-backed system debt can be created via lending, but the underlying asset of debt is the actual money – gold. The M1 money supply represents the physical coins and notes in circulation, checkable deposits and the Negotiable Order of Withdrawal accounts – the money. In essence, M1 is the amount of money which would have to be backed by gold in a gold-based monetary system.

All of the past gold-based monetary systems have been mostly local and even the Bretton Woods system was only semi-global. The situation is different now as the US dollar represents the vast majority of global transactions. Since the world is deeply interconnected it is likely that the next monetary system would have to be built by international measures and standards. This is why instead of local M1 money supply it is more reasonable to examine the global M1 money supply or at least the combined M1 of major economies.

The global M1 – consisting of the United States, eurozone, China and Japan – based on the latest figures available as of April 2019 was around 28,28 trillion US dollars (Trading Economics 2019e). The total official gold reserves held by central banks around the world was roughly 33 743 tonnes (WGC 2019c). By dividing the global M1 by global gold reserves the price of gold would need to be over 26 000 US dollars per ounce at 100 per cent backing. It can be argued that a 40 per cent backing similar to the gold exchange standard would be enough but that would still amount to over 10 400 US dollars per ounce

– making the conservative 5 000 US dollar target price based on the cycles analysis look small.

If the price of gold is set too low for example 6 000 US dollars, governments would have to contract their money supply in order to meet their 40 per cent backing target which would be deflationary. If the price is set too high it is not that big of a problem since the gold backing can exceed 40 per cent. However, if the price exceeds the official target rate, whatever that may be agreed on, that would likely cause the price of other assets to rise causing inflation. This is why it is important to set the price correctly.

In the interviews, gold's future monetary aspect raised differences in opinions. Given that the interviewees were mostly skewed towards the gold industry the most common answer was that gold has an undeniable monetary aspect to it. However, most of the interviewees were sceptical when asked whether the world would see a gold-backed currency over the next 20 years. One of the reoccurring issues raised by the interviewees was that the current monetary system allows countries and central banks lots of flexibility towards monetary policies and most importantly government level deficit spending. It is this component which is generally seen as the largest obstacle towards any large country adopting a new form of a gold standard.

Also on a reoccurring basis, the interviewees told that gold might still have some form of a role in a new monetary system as a confidence raising or a stabilising element. Interviewees were not uniform on whether gold would be left as a part of the system or whether gold would be pulled out of the monetary system once the crisis situation would stabilize. Most interviewees considered the likelihood of gold being issued as convertible money – meaning that gold could be claimed upon request from a bank – low. This was mainly due to interviewees opinion that governments are too reluctant to get back a gold standard.

Whether or not gold would have a place in the new monetary system is debatable. There is clear reluctance to get back on a gold standard at least amongst western governments. However, east is sending strong signals which suggest that gold's status is likely to grow – whether that means a gold-backed monetary system or merely leverage in negotiating the new system. The Basel III's definition of gold as a risk-free asset was just one of many supportive arguments for gold's potential remonetisation. Next chapter examines further supportive evidence for this proposition.

4.3.3 China, Russia and Trade Partners

This chapter examines the roadmap which has led to this situation, the situation at the moment and the path coming forward based on known facts as well as situation analysis. The subchapters discuss the implications of US tariffs, China's situation in the context of history, actual developments taken by China with its allies towards a new monetary system, a hypothetical China's plan behind the visible developments as well as the basis for the hypothesis.

The whole process has been ignited by tensions in the global monetary system which have been prevalent for decades. It is no secret that the US has been abusing its power which comes from the control over the US dollar and that China has been accumulating gold since the early 2000s even though the general opinion among western economists is that gold serves no monetary use. While these developments have been continuing for a long time already the line of events has got more intense over the past few years suggesting that the final form for the next monetary system is shaping up amongst the constructors – China, Russia, and their trade partners.

These tensions can be seen as the causal factor for the efforts to create alternative payment systems independent from the US dollar as well as the trend of global gold accumulation and repatriation. With the Basel III agreement in a globally infected currency crisis, the physical gold reserves acquired by China and other nations will remain risk-free whilst the trust on the AAA-rated government bonds will most likely get downgraded at some point once the trust towards the system staggers.

US Sanctions

Arguably the most recent development in the global dollar standard has been the US' abusive use of the dollar against operators such as Iran, Russia, and China which are seen hostile towards US agenda of global dominance over payments. The US has issued sanctions towards entities and individuals in over 180 countries and economic regions in 54 sanction programs (OFAC 2019). However, most of the sanctions revolve around three principles which are energy, military actions, and trade. These three agendas are present in the cases of China, Russia, and Iran. It is good to keep in mind that individual sanctions are irrelevant, and this research paper only addresses the big picture.

In China, most sanctions are based on the ongoing trade dispute between China and the US. The US is accusing China of manipulating their foreign exchange rates so that the Chinese yuan is unnaturally weak against other major currencies including the US dollar.

This makes Chinese exports relatively speaking too competitive against US exports which in turn is harmful to the US economy. In short, the US' idea behind the sanctions and tariffs is simple: to impose tariffs and trade blocs for Chinese goods and services in order to damage the Chinese economy and to submit China to strengthen their currency in order to make US goods more competitive in the long run. The core of the US sanctions on China revolves around trade.

The US' sanctions on Russia are mostly due to the crisis in eastern Ukraine which began in 2014 when unidentified separatist troops began military actions against the Ukrainian government. The events led to the occupation of Crimea and the still ongoing prolonged war in East Ukraine. Although Russia denies its involvement in any of the conflicts it is an undeniable fact that Russia has been actively involved in both of the conflicts. For these reasons, the Obama administration in support with the EU began sanctioning Russian companies and individuals tied to the incidents. The idea is once again to harm economic conditions in Russia which has somewhat backfired in EU due to Russia's importance as a trade partner and Russia's media efforts to defame the situation in the eyes of Russians. The core of the US sanctions on Russia revolves around military actions.

The US' sanction program towards Iran is one of the longest of all US' sanction programs having begun in 1979 due to a hostile attack towards an American embassy in Tehran. Later US sanctions on Iran have been issued due to the support of terrorism, Iran's internationally condemned nuclear program as well as energy. The energy-related sanctions began in 1996 when the US issued sanctions towards investments related to the Iranian petroleum industry in an effort to restrict Iran from funding terrorism. Later in 2011, the US issued sanctions towards third-party countries which are importing large amounts of oil from Iran – a sanction program to which the EU also agreed upon in 2012. (Atlantic Council 2019.) In 2018 the US under the Trump administration issued a large set of sanctions labelled as "toughest ever" by President Trump which as mentioned in chapter 3.1.1 the EU was quick to condemn. The sanctions were directed towards Iranian banking, shipping, and oil industries. Looking via a large scope the core of the US sanctions on Iran has been both military and energy-related.

During Alexis Stenfors' extensive career as a foreign exchange market maker, he spoke with many central bankers who even called directly to him from time to time to seek for his opinion on how well the currency market in question was functioning (Stenfors 2017, 29). In the interview, Stenfors pointed out that he believes that the US will begin to use the dollar a lot more politically. Stenfors hypothesised that the US could potentially resolve into

leveraging the dollar's status even further on the country level. Stenfors raised the concern that the US could raise the interest rate on foreign exchange swaps and thereby squeeze other countries quite easily. Stenfors pointed out that raising the interest rate on foreign exchange swaps would be a political issue but since the US is in control of the dollar that could be done. (Stenfors 21.11.2018.)

Generally speaking, the US aims to prop up its grip from the global monetary system and US' multidimensional control of the world with sanctions. Once countries cease to play ball with the US, they risk getting sanctioned like China, Russia, and Iran. The US is dictating the whole western world whom to trade with but that is no longer acceptable in a world where there is no need for centralized trade processing like the Swift system. Countries are quickly overcoming the sanctions with bilateral trade agreements and new trade settlement platforms outside the reach of the US.

From the United States Department of State archives on Bretton Woods conference: "The policies adopted by governments to combat the Great Depression - high tariff barriers, competitive currency devaluations, discriminatory trading blocs - had contributed to creating an unstable international environment without improving the economic situation" (US Department of State 2009). When comparing these causal factors which led to the creating of the Bretton Woods system ironically the current president of the United States – President Donald Trump – is supporting the very same actions which led to the creation of the Bretton Woods system. Today these actions include high tariffs on Chinese goods, currency devaluations around the world and trade blocs issued towards Russia, Iran, and North Korea. If history were to purely repeat it would suggest that a new monetary system will soon be in place.

China's Trade Partners and Gold

Since gold is seen as an alternative reserve asset to the US dollar and other fiat currencies, and gold has a long history of being money it could well be that China and Russia are developing a new cross border payment system backed by gold. In the same chapter was disclosed that Kazakhstan has been accumulating gold since 2011 alongside with other eastern countries. Currently gold accounts for 43 per cent of Kazakhstan's total reserves while in 2011 this figure was as low as 8,8 per cent.

Kazakhstan's exports over 41 per cent of its total exports to three countries namely Italy, China, and Russia. Italy accounts for the largest share of the three at over 20,3 per cent with China coming second at 11,4 per cent and Russia third at 9,5 per cent of total exports. (WITS 2016) Kazakhstan's largest exports include crude petroleum, refined copper,

petroleum gas, radioactive chemicals and ferroalloys (OEC 2018c). It does not come as a surprise that China happens to be the world's largest importer of crude petroleum, refined copper, and ferroalloys (OEC 2018a; OEC 2018b; OEC 2018d). Whilst Kazakhstan is not the world's largest exporter of these commodities the proximity of China offers competitive advantage for Kazakhstan when it comes to exporting to China. The same competitive advantage applies to Kazakhstan's trade with Russia.

China has also invested heavily into Kazakhstan which plays a vital role in the One Belt One Road initiative designed to connect China to the rest of the world. According to an article published by an Azerbaijan news office, AzerNews China invested 15,6 billion US dollars into Kazakhstan in the first half of 2018 which was 800 million dollars more compared to the same time period in 2017. China's investments to Kazakhstan have been focusing on five core sectors which are logistics, mining, financial services, construction, and manufacturing. (AzerNews 2018.)

Due to the structure of exports and the strategic importance of Kazakhstan for China and Russia, it would make sense for these countries to keep Kazakhstan up to date on a secretive plan of creating an alternative payment system rivalling the dollar. It is crucial for China and Russia to keep Kazakhstan's economy in good shape in order to maintain a stable trade and supply of goods with Kazakhstan. Therefore, it is possible that China and Russia have been advising their most important import countries to accumulate gold reserves so that when the structural change takes place the imports from these countries are secured.

Kazakhstan is far from being the only country with tight relations with Russia and China. The One Belt One Road initiative, also known as the Belt and Road Initiative (BRI), is a project led by China aiming to connect over 70 countries on four continents to each other to enhance the physical, commercial and cultural links between the countries. However, the main objective of the project is to create a large trade network for international trade via maritime and railroad routes. The four continents include Asia, Europe, Africa, and Oceania but not the Americas. Unsurprisingly China also aims to increase its economic and political influence over the regions involved. (The Guardian 2018b.)

China's Privileged Situation

As was discussed in chapter 3.1 the US became the current superpower by accumulating the world's largest gold reserves selling goods to countries in need, and thus controlling the world's monetary system from the beginning of the First World War up until the US dollar standard which is still in use. First, the US made other countries reliant on US

goods after which the US made countries reliant on the US dollar. If we look at the world today, the US is hardly producing any essential goods for the world – as a matter of fact, the US has been running a steady trade deficit all the way from 1976 (Trading Economics 2019d). In addition, there is no fundamental need to use the US dollar as the main reserve currency other than existing payment infrastructure.

In the context of history, China's current situation reassembles the US's situation in the 1920s. Currently, almost every country in the world has trade deficits with China since almost every country in the world needs Chinese goods. The need for China's low cost of labour, vast natural resources and notoriously low regulations on employment has allowed China to create the world's largest manufacturing sector. Based on the United Nations Trade and Development 2015 annual report China accounts for one fifth of global manufacturing and according to the International Labour Organization China's manufacturing sector employed almost 130 million people in 2017 which is more than double the amount people employed by India – world's second largest manufacturing employer – and almost seven times the amount of people employed in manufacturing in the US (Brookings 2018).

The fact that China outputs one-fifth of the world's total manufacturing output does not consider the actual nature of Chinese manufacturing. China's manufacturing is focused on intermediate products and so China manufactures lots of parts and inexpensive goods in massive volumes which are then further assembled into end products in other countries. This means that Chinese components are likely to be used in far more than 20 per cent of the world's end products. China has also a very diversified export portfolio in which no single segment dominates. The largest component of China's exports is broadcasting equipment which accounted for 9,6 per cent of China's 2017 exports followed by computers at 6,1 per cent but the total portfolio consists of hundreds of smaller segments (OEC 2019). By exporting goods all across the world China has made most of the developed world dependant on itself which has put China into a very privileged situation.

In the 1950s the US had accumulated the world's largest gold reserves and the US acted as a key supplier for Europe. Fast forward to 2019 and China enjoys a very similar demand frame as countries around the world are dependent on Chinese manufacturing and as was mentioned in chapter 3.1.2 China has been accumulating gold reserves over the past 20 years. Taking to account that as was discussed in chapter 4.3.1 the world is on brink of a currency crisis which means that the world could be heading towards another Bretton Woods meeting only that this time the US is very likely to be in a much more disadvantaged position compared to 1944 and China is likely to be the host of the event.

New Developments in Transacting with Gold

As was discussed in chapter 3.1.1 examining the global US dollar standard, governments around the world are rapidly trying to create alternative systems such as bilateral trade agreements to bypass the US dollar in international trade. However, the bilateral trade agreements are not the only developments towards independence from the US dollar. There are also increasing efforts to make transacting with gold easier.

The First Deputy Governor of the Russia Central Bank Sergey Shvetsov stated in April 2016 to a Russian news agency TASS:

BRICS countries are large economies with large reserves of gold and an impressive volume of production and consumption of this precious metal. In China, the gold trade is conducted in Shanghai, in Russia it is in Moscow. Our idea is to create a link between the two cities in order to increase trade between the two markets.
(RT 2016.)

In the original source at TASS' website, Shvetsov had estimated that a capital market trade network could be finished in five years – by 2021. Shvetsov pointed out that the importance of London and Switzerland as gold trading hubs is diluting and that the BRICS' are considering a bilateral contract based gold trade system. Offshore settlements in yuan were also made possible in Russia in 2016. (TASS 2016.) As was discussed in chapter 3.2.3, China has also been actively expanding the reach of its yuan-denominated gold benchmark by listing it into Dubai and Budapest.

In 2017 the World Gold Council suggested that India could be setting up a new gold spot exchange to meet the requirements of international gold trade. After all, India has currently the second largest yearly gold demand coming second to only China. (WGC 2017.) The suggestion was confirmed in early 2019 as Kalyanaraman Rajaraman from the Department of Economic Affairs of India said that the country is working towards establishing a gold spot exchange, increase the number of bullion banks and to issue more standardized gold products for trade. (Business Today 2019.) Amongst the gold industry, there have also been rumours that India would be working towards establishing nationwide gold and silver accounts where people could deposit gold into the bullion banks and transact electronically with gold along with the India rupee.

Also in early February of 2019 as the media was ripping over Venezuela's efforts to move its gold reserves out of London another twist emerged as the media found out that a mysterious Turkish firm assembled just a year earlier had transferred over 900 million US dollars' worth of gold in less than a year. The company had been formed two months after

Venezuelan President Nicolas Maduro had visited Recep Tayyip Erdogan in Ankara Turkey. (Bloomberg 2019c.) The reason for the gold transfers have not been disclosed but it is likely that Turkey has been helping Maduro escape the US sanctions via gold trade.

James Rickards has hypothesised that the new developments which are taking place to ease transacting in gold could be aiming to create an alternative trade network between countries selected into the system. Rickards noted that both Russia and China have been building their own internets which would not necessarily be linked to the World Wide Web. In this system, trade could be executed in a gold-backed inter-government blockchain based system where net transactions would be settled in physical gold from time to time. (Kitco 2019a.)

Rickards pointed out that the system would be far less consuming relative to the old gold standards as transacting could be done on a blockchain and then the net trade could be settled in physical gold deliveries a few times a year. With settlements calculated based on net trade, the physical gold trade would be a lot smaller opposed to a system where each trade is settled with an individual gold transfer. The net based settlement system would not need a full gold backing as net settlements would be much smaller than gross settlements. Rickards also noted that the yuan or the Russian ruble are not good enough to become international reserve currencies, but a gold-backed trade network could be used as a reserve asset. (Kitco 2019a.)

These are just some of the publicly known facts and theories on how the developing world is moving towards a world of easy gold transactions. The reality and the extensiveness of the system might be a lot different from what can be seen at the moment. The combination of efforts to bypass the US dollar and new ways to transact easily with gold suggests that certain countries want people to buy more gold and to some extent boycott the US dollar and prepare for a future where gold will hold a larger role compared to what it has today. The dialect emanating from high profile officials not only in eastern countries, but also European officials is hard to go unnoticed and is very dollar-negative as was also discussed in chapter 3.1.1. Another supportive argument for gold which has not been addressed by internationally known figures is China's large trust issue.

China's Trust Issue

Most of the people in the west do not realize how bad trust issues are in China. As a matter of fact, most people have most likely never heard of China's immense trust issue. Over the centuries, the Chinese people have witnessed a series of nationwide frauds, scams,

and betrayals which have become a part of the everyday lives in China. One of the cornerstones in laying the trust issue happened during the Second World War when Japan committed the infamous Nanjing Massacre where Japanese soldiers slaughtered over 200 000 people, most of which were civilians, and raped over 20 000 women (History 2018). The Nanjing Massacre was one of the most vicious and horrific acts in modern Chinese history which undeniably left deep wounds in the Chinese people from that era.

Another large contributor to China's trust issue was the rise of communism and Mao Zedong. After the horrors of the Second World War, famine and harsh conditions at communist labour camps enslaved and killed millions of people (The Guardian 2013). The estimations of the death toll from China's post world war era up until the end of the cultural revolution in 1976 range usually in the millions with some estimates reaching as high as 45 million (SCMP 2010). One of the largest human rights scandals during China's ongoing communist era was the Tiananmen Square massacre which took place in 1989 and turned a civilian protest into a massacre of which death toll is unknown although some sources suggest civilian casualties excess of 10 000 (Independent 2017).

Some smaller incidents include China's milk powder scandal which took place in 2008 when poisonous melamine was found in baby milk powder and other dairy products from 22 companies making an estimated 300 000 babies ill at the time and leading to executions of people related to the scandal (BBC 2010). In addition, there have been other similar scandals where companies have sold expired meat as fresh, counterfeit medicines in large scale and more recently vaccination of children with expired polio vaccines.

One absurd example of the trust issue in China popped up in 2016 when medical personnel from a local hospital noticed that a Chinese man was missing his right kidney after a surgery performed earlier. The man was involved in a car accident after which he required chest surgery. Hospital records showed that during the chest surgery doctors had taken out the man's right kidney, but according to the records doctors had put it back after assessing that the kidney was undamaged. In further treatment, CT scans conducted in three different hospitals showed that the kidney was indeed missing. The hospital which had performed the surgery claimed that the kidney must have naturally decayed while other hospitals in the area refused to treat the man having heard that his right kidney was missing. (SCMP 2016a.)

While the actual reason for the missing kidney was most likely never publicised and the case was just an individual example the story was familiar to many people in Hong Kong

and shows the extreme mistrust between people in China. It would be very difficult to imagine similar news from western countries and these are just some of the most well-known cases which have seen the daylight in western media. Shocking acts of betrayal, fraud, and scam have imbedded a deep trust issue into the Chinese people.

With so many scams exposed people have developed caution and are much more reserved and defensive than in the west where such scams are extremely rare. However, as more and more scams have been exposed the situation is gradually getting better according to sources from Hong Kong. China has been working hard in weeding out the bad apples from every part of the society – on the commercial, public and individual level – which has slowly built internal trust towards the system although state control has exploded.

Visiting Shenzhen is very revealing to the reality of China's state control. On the border of Hong Kong and Shenzhen, there are numerous control points where visitors are scanned with tens of different cameras, fingerprints are taken from the visitors and passports are taken to backrooms for checking. Shenzhen is a part of China's extensive social score project which aims to give all Chinese people scores based on their behaviour, social status and law-abiding. The project is very much like a large scale surveillance operation aimed to control the people in every aspect of their lives. In discussions conducted in Hong Kong, people from the mainland China are generally not worried over the social scoring system. The system aims to control the people but in exchange, it keeps the bad guys off the street and gives the Chinese people one thing – trust.

The trust issue is also one of the key reasons why official figures on the Chinese economy cannot be fully trusted. The mere lack of transparency still reassembles the Soviet Union in a disturbing manner. China updated the official figures of its gold reserves just two times between 2003 and mid-2015 although official reports claim that they had been accumulating on a quarterly basis. Officially China's gold reserves are below 2 000 tonnes although experts like Jan Nieuwenhuijs have estimated the reserves to be in excess of 4 000 tonnes by conservative measures.

Other economic figures are also likely to be tapered by Chinese officials. Brookings Institution estimated in March 2019 that China may have been overstating their GDP growth by as much as two percentage points annually over the past 12 years. The study estimated that the Chinese economy could be as much as 12 per cent smaller than what the official figures say. (Financial Times 2019.) As was with the counterfeited economic data from Japan discussed in chapter 3.4.1, part of the reason is that countries around the world have faced immense growth problems over the past ten years but a part of it is also

culture related. In the Asian culture, losing a face – for example by showing slowing growth – is the ultimate humiliation and sometimes completely unacceptable. However, the same issue persists in the western world as well. As was in the statements made by Fed officials the day after Lehman had failed and during the invasion of Libya western top-level official can also make things seem prettier than what the reality is.

The Chinese government understands that there is a prevailing trust issue not only inside China but also internationally. China has been seen as untrustworthy for a long time due to China's problems with the regime, communism and the bad reputation of China's counterfeiting market. Even large international companies have difficulties accessing the Chinese market as China still holds immense capital control policies in place. This is why China has begun working on its international relations by investing abroad, sending gifts like pandas to countries and hosting luxurious visits for leaders around the world. It is all a part of the Chinese way of conducting business. Establishing a gold-backed currency would create trust towards China as a trade partner, the stability of the Chinese economy and the somewhat dubious regime.

No Poverty in China by 2020

China's president Xi Jinping has announced a public goal that there shall be no poverty in China by 2020. According to China's definition published in 2011, a person is below the poverty line when he has less than 2 300 RMB at disposal on a yearly basis – equalling roughly 330 USD. Although 2 300 RMB is not much, over 40 million people in China were below the poverty line in 2016. (EIU 2018.)

China has long traditions with gold jewellery and that is arguably best visualized in the streets of Hong Kong. Hong Kong is filled with jewellery stores selling diamonds, platinum jewellery and 99,99 per cent pure – four nines pure – gold jewellery. In the Chinese culture, pure gold jewellery is given on almost every occasion from birth to weddings until death. Almost everyone in China has at least some gold jewellery which they have received as gifts or inherited. Interestingly the purity of the gold jewellery in Hong Kong and China is primarily four nines which further underlines China's trust issue as anything but pure is seen as somewhat untrustworthy. Much of the gold in China is owned by individuals in the form of both investments and jewellery.

The World Gold Council estimated in 2014 that Chinese households were holding a total of 7 600 tonnes of gold, roughly 311 billion US dollars, in 2013. In addition, net jewellery demand in China has totalled over 3 700 tonnes, over 155 billion US dollars, between 2014 and 2018 according to the World Gold Council. (WGC 2014; WGC 2019a.) This

means that households in China are likely to have over 11 300 tonnes of gold jewellery. As was hypothesised earlier, China could adopt a 40 per cent backed gold standard at 10 000 dollars per ounce. This would increase the value of gold jewellery held by Chinese household from 463 billion US dollars to over 3 632 billion.

With gold prices rising almost sevenfold that would quickly make meaningful changes to the wealth of even some of the poorer households in China. While China has been pushing determinedly towards the no poverty 2020 goal even without implementing a gold standard, and the odds of that happening by 2020 are relatively low, a gold standard would definitely enrich Chinese households remarkably.

China's Grand Plan

The combination of dissatisfaction towards the global dollar standard, China's privileged situation in terms of trade, the rapid developments in gold transactions across the globe and China's trust issue could be hinting China's potential grand plan to dethrone the US dollar. All of these issues could be solved easily by backing up the Chinese yuan with gold and thus adopting a form of a gold standard.

A gold standard would create both global and local trust towards the yuan since – although not publicised – gold is and has been money for thousands of years. As a result, the yuan would quickly be considered a store of value and receive further demand as a reserve currency. The implication of a gold standard would also explain the rapidly increased gold settlement facilities. With countries running trade deficits they would be forced into the system as China could refuse to accept payments in US dollar and instead request payments in either physical gold or in yuan – which China would be willing to borrow for countries with little or no gold reserves just like the US did during the Second World War.

As was discussed in chapter 3.1.2 China is far from being the only gold buyer on the market. Eastern and more recently some western central banks have been accumulating large amounts of gold ever since the financial crisis of 2008. Gold played a key role in allowing the US dollar to become the world's reserve currency which in turn allowed the US to propel itself to become the global superpower it is today. The old saying "Whoever has the gold, makes the rules" still applies to this data as the US continues to hold the world's largest official gold reserves. This has been the case ever since the gold exchange standard but now China and Russia have been accumulating lots of gold.

Jewellery is far from the only form of gold held in China. As was earlier discussed China's central bank the PBOC has also been accumulating gold in a rather opaque manner and could be holding upwards of 4 000 tonnes of physical gold bullion. In an article written by Jan Nieuwenhuijs he speculated that based on a thorough analysis on the SGE gold withdrawals, imports from Hong Kong, United Nations' international merchandise trade statistics service COMTRADE, Switzerland's customs data, gold export statistics provided by several countries and China Gold Association's gold mining statistics that there could be upwards of 20 000 tonnes of gold in total held in China. Nieuwenhuijs also deems the 20 000 tonne figure as a conservative estimation. (BullionStar 2017a.)

Many analysts and economists put a large emphasis on China's US dollar reserves which are the world's largest standing at roughly 1,1 trillion dollars (CNBC 2018a). A lot of people seem to think that the US debt China is holding would prevent China from disturbing the US' dominance in the world's monetary system. People think that China is somehow stuck with the US bonds as the position is too large to liquidate to the market. In addition, people think that a strong US dollar is in the interest of China so that once the US pays back the debt China will receive strong currency with high purchasing power.

As was calculated earlier if China were to back the yuan with gold the price of gold would have to be about 10 000 dollars at a 40 per cent backing. That would value China's gold reserves – 4 000 tonnes as estimated by Jan Nieuwenhuijs – at 1,29 trillion dollars which is in fact more than what the bond position is worth. China's 20 000 tonnes total gold hoard would be worth over 6,4 trillion dollars. At 100 per cent gold backing the figures multiply by 2,5 making China's 4 000 tonne reserves worth over 3,21 trillion dollars – almost three times as much as the current bond position – and the hoard worth over 16 trillion dollars.

It is true that China cannot liquidate its US bonds as it would crash the bond market although the US would not allow China to do that and the US would freeze these assets before the selloff would even begin. It is also true that China would make huge losses on those bonds if the US dollar were to fall in value. What people fail to see is that China does not care about the 1,1 trillion dollar bond position. If China were to increase the value of its gold position even the gold jewellery held by Chinese households would be worth over three times the current US bond position at a mere 40 per cent gold backing. If China were to adopt a gold standard the US dollar would most likely be in deep trouble already and China would not care about its position in US bonds since it would be next to worthless due to the loss in the dollar's purchasing power.

Another supportive case can be made that since the US is utterly dependent on Chinese imports the US would have to comply with the new regime ruled by China and start paying new imports from China in gold. The US is far from being the only country which is running trade deficits with China and as countries would be forced into paying with gold or the yuan this would further cumulate China's massive gold hoard continuing to prosper the people in China.

Over the past ten years, China has been building a gigantic infrastructure network around the world which has been serviced largely by China's government debt with the One Belt One Road being one of the largest projects. China has also been buying vast areas of land from Africa and South America from areas which are filled with natural resources. Both the infrastructural investments and land acquisitions are strategic assets for China which allow China to gain influence around the world and to build a solid base for China's future trade. The One Belt One Road initiative allows China to gain global influence and to make the world even more dependable on Chinese goods and investments. It is also important to note that countries struggling with growth are gladly accepting the investments as they employ the local population and bring money into these countries.

To conclude, by increasing influence across the world China is making countries more dependent on China and Chinese exports. By backing the yuan with gold and by refusing to receive payments in anything but gold or yuan countries running trade deficits with China would be forced into the new system and forced to accept the yuan. China's own imports and key exports are already covered as China's major trade partners have been accumulating gold reserves which will ensure trade between China. The gold backing would also revalue the wealth held in gold by the Chinese people and the state of China overnight contributing to the goal of zero poverty in China. Whilst just one scenario amongst many this could be China's grand plan for global domination via a new monetary system.

4.3.4 Risks from Monetary Perspective

Although the past 150 years of monetary history suggests that we are due for a monetary system reform that does not necessarily mean that gold will be a part of the new system. The interviewees who considered this to be possible raised both political concerns and potential alternatives which could be used to back up the failing global monetary system. These two main topics are the most significant risks for gold prices over the next 20 years from a monetary perspective as they could potentially set back the progress made so far in the gold space. Free markets have shown to win over time, but it is important to be critical and examine the potential obstacles which gold's remonetisation faces.

Political Resistance

It is no secret that politicians love to heckle high expectations and government spending programs ahead of elections in order to get elected. Spending programs on government level have emerged as a massive trend over the past 100 years as 'social security for all' has been the leading theme in the developed world. Social spending programs are fine as long as the economy is strong, and governments are able to run balanced budgets. Fast forward to today and many countries struggle with real growth and budget deficits are more of a rule than an exception. The situation was the same in ancient Rome where government resolved into exponential expansion to collect enough tax returns in order to keep the society running. 'Big government' is thousands of years old, yet it also runs in cycles.

Representing his own opinion Jan von Gerich noted in his interview that although it would be technically possible for the US to pay down its federal debt the US is unlikely ever to do so (Von Gerich 11.12.2018). The fact that a gold standard would force governments to run balanced budgets means that there is immense political resistance towards gold standards and so political resistance towards gold remains as one of the key difficulties for gold monetisation. The deficit spending problem is global and the fact that the global monetary system is heavily dependent on debt issuance means that the unwinding of such a system would be an immense global problem. Both socialist and neo-capitalist resistance would also be sure to appear as governments would be forced to run balanced budgets and debt would become exponentially more expensive and more difficult to get.

In a way, the world is at an inflexion point where government deficits are viewed as normal, yet people are somewhat fed up with governmental bureaucracy and inefficiency. The Yellow Vest movement is a prime example of the resistance towards big and inefficient government which does not serve the purpose it was created for – servicing the people. The ease at which debt has been issued after the financial crisis or 2008 to stimulate economic growth has spurred a wave of neo-capitalism in which debt is viewed as means of prosperity which carries little risks and offers a fast lane to the good life. The way how governments have been running deficits ever since the Second World War has been infected to the ordinary people who have become slaves of debt.

For gold to be remonetised, the world will have to accept the cruel reality that debt is an obligation which carries risk and real interest – in a free market, not a single investor would borrow money at negative interest rates. While political resistance is a significant obstacle for gold remonetisation it does not mean that gold remonetisation would be off the table. It all comes down to values which the global governments drive for. Based on

China's trust issue and moves towards making gold transactions easier there could be a few safe havens in the world which value sound monetary policies over debt. However, if political resistance is great enough and global gold monetisation will be at least postponed as a currency crisis situation can be potentially stabilized with gold alternatives.

Alternatives for Gold

Another potential obstacle which gold remonetisation could face is alternatives such as government-issued cryptocurrencies or the IMF special drawing rights. Apart from the euro, reserve currencies are local currencies. In a currency crisis, if a major local currency such as the US dollar or the Japanese yen faces serious loss of confidence that currency could be strengthened by backing it up with something tangible such as gold or a something else such as a currency basket like the SDR. Amongst interviewees, the IMF's SDR was the most popular selection for the most likely substitute or the most likely bailer for the US dollar if there is a currency crisis.

It could be that China and Russia along with other developing economies are not ready to take matters into their own hands via a gold-backed transaction system even though their gold accumulation would suggest otherwise. They could simply use their gold reserves as leverage for votes in negotiations for the next monetary system. The result could be that all major economies agree on a system where all currencies get backed by the SDR in hopes of creating somewhat false confidence towards the international monetary system. The scheme could be pushed even a bit further by digitalizing the SDR, taking the control from the hands of the IMF and distributing control amongst the participants via a distributed ledger – a blockchain. Some interviewees went even further suggesting that the whole cryptocurrency mania was the creation of the global elite – central bankers, globally top-level politicians, intelligence and military officers – to introduce the idea of a cryptocurrency amongst the public before releasing the “SDR coin”. The idea may seem farfetched, but the crypto mania did get the word out to the public efficiently.

The SDR backed system could be either a widely accepted medium of exchange or it could be purely for government level transactions. As was discussed earlier in the report, governments are effective in creating false believe amongst the general public. Consumer inflation is primarily the result of consumer spending and production costs which are related to commodity prices. In a currency crisis where there is the threat of high inflation or even hyperinflation, it is important to control the spending of the currency – the velocity of money. This can be done effectively if the people simply believe that inflation is not a threat to their purchasing power or in other words by making the currency seem more stable which can be done via tweaking the system whether that means a gold-backed system

or an SDR-based system. The public will most likely not understand the SDR backing and politicians and government official can make the system seem better than the old system even though the same fundamental problems persist.

A purely digital system would require far less infrastructure as opposed to a gold-based system where physical deliveries would need to take place from time to time. Interviewees also noted that the most powerful people in the world do not want gold to be money as it limits their ability to issue debt and gather wealth. Interviewees also raised concerns of large scale gold confiscations as a potential risk if the new monetary system would require it. All of this is easily imaginable in the western world but the developments in the east including Russia making gold VAT free and China creating extensive gold trading networks with small quantity deliveries possible speak another tone. There seems to be a large divergence in the views on gold which could prevent the new global monetary system from being purely fiat-based.

4.3.5 Conclusion on The Third Scenario

The monetary system reform scenario is undeniably the most radical scenario presented in this report. A complete overhaul of the current debt-based currency system has lots of open-end questions which are more or less a guessing game since such a reform is likely to take place when economic uncertainty is extremely high, and people are afraid over their livelihood – a combination which has historically led to unpredictable and radical changes towards both better and worse. If done correctly and with individual freedom in mind, the reform could also be very healthy for the world's economy in the long run. The current global economy has adopted the low interest rate high debt environment to a point at which it is necessary for the economy to have historically low interest rates just to function on a normal level.

When examining recent monetary history presented in chapter 3.1, it becomes apparent that monetary systems do not necessarily last long, and changes can take place with short intervals as was in the 1930s and 1940s when the US first devalued the dollar in 1934 and adopted the Bretton woods system later in 1944. Taken that the current monetary system was basically created in a panic over the US inflation, it is not particularly difficult to think that the current system could well be deeply flawed. Even the former Fed chairman Paul Volker has admitted that the current system which was created by the Nixon Shock was never meant to last and that the Nixon Shock just postponed the inevitable by forty years – the collapse of the US dollar's hegemony (Barron's 2018).

Even though Paul Volker's "forty years" has passed it does not mean that the current global monetary system is out of the woods. The question of a monetary system reform is not 'if' but 'when' with the 'how' remaining uncertain. Whether the new system will be fully or partially gold-backed, based on a net settlement blockchain based trade system, dependable on the SDR or something else remains to be seen. While a shift from the US dollar to an SDR based reserve currency system would disarm the US from the power of sanctioning other countries by closing them out of the Swift system it would not eliminate the possibility to conduct faulty monetary policies. Governments love the debt based inflationary monetary system as it enables them to spend today, wait for the currency to get devalued over time and pay back with the devalued currency. This is also one of the key reasons why deflation is viewed as the worst nightmare of governments.

Political resistance and the potential of an SDR based alternative system are the most significant obstacles for gold's remonetisation. The question is whether the SDR based system would be able to create sufficient trust in the midst of a currency crisis. It all comes down to values and trustworthiness. As was discussed in chapter 4.3.3, China has a persistent trust issue at hand. If the Chinese want to take care of it once and for all they will have to generate a lot of trust internationally. A gold-backed yuan would be ideal for this as it would show that the Chinese are willing to stand by sound principles which other countries have left behind. In addition, if China were to adopt a gold standard, every country would have to follow suit as nearly every major economy in the world is dependable on Chinese goods.

The general distrust carries out to the Chinese business culture which is another factor western people rarely understand. In China, connections are often seen as the most important aspect of conducting business and business relationships are built with high integrity and long-lasting objectives in mind. When examining China's foreign policies and foreign investments around the world this is exactly what is taking place. China does this with political gifts such as donating pandas to zoos in foreign countries and with lots of complimentary visits to these countries. In addition, the investments made by the Chinese are often seen as blessings in many countries which still battle with slow economic growth prevalent ever since the 2008 financial crisis.

The trust issues are not only forcing the Chinese to conduct delicate and amiable foreign policies with countries they want to conduct trade with, but the trust issue could well be the key to whether or not the Chinese will adopt an actual gold-backed currency in one form or another. David Brady pointed out in the interview that another reason why China would also want the price of gold fixed to yuan would be to stop capital outflows from

China (Brady 22.11.2018). Brady hypothesised that by backing the yuan with gold, China could decrease the notorious capital outflows of the Chinese citizens as they would no longer need to smuggle and launder money out of China to tackle capital controls but instead, they could exchange the yuan into gold at will (Brady 22.11.2018). Yet another way of creating trust towards the regime and the system.

A number of people have noted that China has been accumulating vast amounts of debt over the past ten years and thus China is in as bad of a situation as the rest of the world. It is true that China has been accumulating lots of debt over the past ten years since the financial crisis, but there is a fundamental difference to where China has used the money it has lent compared to where many of the western economies have spent their budget deficits. China has been investing heavily in infrastructure both in China and abroad. China has been buying vast areas of land, building harbours and trade routes around the world. One of the examples of these investments is that over the past ten years China has built the world's longest high speed train networks which stretches almost 31 000 kilometres dwarfing the second longest high speed train network of little over 3 000 kilometres found in Japan (The Spectator Index 2019).

A large chunk of these investments are a part of the One Belt One Road initiative (BRI) and even though a heavy case can be made that China has very selfish goals for the BRI investments the fact that China is investing everywhere also means that China is establishing connections everywhere in the world. Compare that to the protection based foreign policies of the United States, the picture is as different as night and day. China is gathering allies while the US is steering itself away from its previous allies such as Europe. In addition, China's new allies have also been repatriating and accumulating lots of gold.

If China were to adopt a gold standard it would most likely include a global debt write off where at least most of the government debt would be written off. This could happen by the death of the prevailing reserve currencies and the rise of the new standard. Also from this perspective, China would come out of the reform as a winner since China has accumulated assets with the debt whilst the west has accumulated mostly liabilities such as social security and healthcare systems. Whilst the accumulation of gold does not guarantee that gold will be a part of the new monetary system it does raise a question why China and other countries are accumulating gold and creating new ways to transact in gold.

Since China and Russia are pushing forward gold's usage and trade it would seem very peculiar if the monetary system reform outlined would take place and gold would not be a

part of it. In an IMF blog published in February 2019, the writer hypothesised that the central banks could push interest rates into deeply negative territory by eliminating the ability to hold deflationary assets such as physical cash (IMF 2019). If the world were to move from one fiat system to just a consolidated version of the current system, such as the SDR based system proposed earlier, then the last thing governments would want is for people to be able to own deflationary assets such as physical cash or gold. This contradicts with the developments in the gold sector as transacting in gold is made easier day by day. The structural changes taking place in the gold market are likely an indication that gold will be a part of a new monetary system in one way or another.

As China, Russia and many other eastern central banks keep increasing their gold reserves and many other countries repatriate their gold from London and New York the world seems to be moving towards an era of instability to which countries are preparing for. Unstable eras can often be linked with revolutionary wars like the ones in France in the 18th century, collapses of nations like the fall of Babylon in 6th century BC and outright extortion of freedom like the Holocaust during the Second World War. In history, instability has led to large reforms of which a global currency crisis and monetary reform would be historically speaking a relatively peaceful outcome.

The trust issue combined with the efforts to bypass the US dollar, the gold accumulation and repatriation by a number of large nations, efforts to create international gold trading networks, China's no poverty by 2020 mission and the odds start to whey significantly towards implication of an actual gold standard. China seems to be practising the same strategy which enabled the US to rise to its globally dominant position in the early 20th century – acquire wealth and dictate rules. China is acquiring land, natural resources and building infrastructural projects all around the world. In addition, China is importing and accumulating lots of gold with its strategic partners and China is also in much better demographic shape compared to the western world. It seems that China has listened during the history lessons – whoever has the gold, makes the rules.

No matter whether gold will be a part of the new monetary system history has shown that the bid for gold tends to increase during unstable times pushing the price of gold up. When adopting a gold-backed currency, the one who moves first has a massive advantage over the others since adopting a gold-backed currency signals distrust towards the current system and a solution at the same time creating a bid for the new gold standard. Currently, China has the upper hand which the US enjoyed in 1944 and the rest is history.

4.4 Results and the Most Likely Outcome

When considering the most likely outcome for gold over the next 20 years it is important to combine all the theories and see if different approaches support or repel each other. Questions such as: “Do fundamentals support the cycles analysis” and “are there conflicts between the approaches used” are key points which need to be examined in order to create a versatile picture of gold’s future. This chapter discusses the most likely outcome for gold over the next 20 years when taking to consideration the fundamentals, cycles and the upcoming monetary system reform.

The fundamental picture in gold can be described with two bullet points which are the peak in gold production and rigid demand. The peak in gold production includes weakening ore grade from gold mining, depleting gold deposits, rising cost of exploration and the likely rise in AISCs which is partially driven by the rise in the cost of energy. All of these factors suggest that annual gold mining output is likely to fall from the current levels over the next decade or two creating upward pressure for physical gold prices. At the current price, gold miners are in relatively good shape, but the future of gold mining looks bleak. With the technology at hand, the world could potentially run out of gold to mine over the next 20 years.

Gold mining output has been increasing yearly ever since 2009 but the gold mining sector has contracted significantly in size from what it was in 2011 and although there are a few big gold mining companies the smaller producers are still high in numbers. The weighted average AISC of the largest gold miners is just below 900 US dollars which puts a natural floor for the price as production is likely to be scaled down if the price of gold goes sub 1 000 US dollars. Although the e-waste recycling sector has immense potential and is likely to increase the supply of gold over the next decade in the long run gold can be recycled only as much as it is used. The ‘peak gold’ argument considers the rise of gold output from e-waste recycling.

‘Peak gold’ could cause a shortage of gold some time over the next 20 years if gold prices remain at current levels. Since gold is mainly held as long term investment – even a large chunk of gold jewellery is actually held as a long term investment – those investors are willing to exit their physical gold positions at some price levels. However, it is likely that the market needs to get to new all time highs before meaningful selling of physical gold bullion by individual investors takes place since gold bullion investors are often looking for big moves and are generally reluctant to sell their physical gold. Therefore supply from existing stockpile will remain low at current prices.

On the other side of the equation, demand for physical gold remains strong and has become mostly independent relative to the price of gold. A major factor contributing to rigid demand is the monetary demand for gold from central banks. Central banks have been net buyers of gold for the past ten years with purchases accelerating over the past few years. Jewellery demand remains to be the largest demand segment for gold and prior to 2008 financial crisis jewellery demand was negatively correlated relative to the price of gold but since 2009 jewellery demand has been acting similarly compared to investment demand for gold – with a positive correlation to the price of gold.

Jeweller demand combined with physical investment demand for gold totals over 75 per cent of the annual demand for physical gold. If the price of gold remains at current levels for the next few years, demand for physical gold is also likely to remain stagnant but supply will reduce over time due to 'peak gold' pushing the price up. If gold falls significantly – to sub 1 000 US dollars – demand is likely to fall but supply is also likely to scale down which means that over time the price will have to rise back above 1 000 USD. If the price rises, investment and jewellery demand will follow higher supporting the price. All in all the fundamental picture for gold is supportive for higher gold prices over the next 20 years.

Fundamental factors provide partial support as so called big picture fundamentals for gold which drive the multiyear cycles in the markets. Although supply and demand do not offer much guidance in shorter timeframes these fundamentals give the general direction as to where the larger multiyear cycle is heading – up, down or sideways. Currently, the supply and demand fundamentals point towards higher prices which support the argument that gold should produce a series of higher highs and higher lows in the years to come.

From a technical point of view the price of gold has been printing higher yearly lows ever since 2015 but as of April 2019 higher yearly highs have not followed. For the time being the gold market remains in a consolidation between 1 045 and 1 375 US dollars. However, the price of gold has been rising in many other major currencies and is at or close to all time highs in Britain, Australia, Canada, Japan, Sweden and Norway. The high inflation in the emerging markets, including Iran, Argentina and Turkey, has propelled gold much higher in their local currencies and the high inflation could spread into the developed economies causing stagflation which would be an ideal environment for gold.

Considering that the current top on the eight year cycle occurred just seven months into the multiyear cycle, as of 2019 it is too early for a major selloff in gold which would push the price below 1 000 USD per ounce. As a matter of fact, since the commodity complex

is likely to have put in a generational low in early 2016 the eight year cycle low in gold is also likely to be a generational low for the price of gold. If gold were to fall below 1 045 USD that would most likely draw other commodities down with it and since oil is likely to experience immense price inflation over the next five to ten years, due to reasons presented in chapter 3.3.3, it remains both statistically and fundamentally very unlikely for gold to fall below 1 045 USD.

If gold began the C-wave advance of the larger currently 20 years long ABC-wave which was hypothesised in chapter 4.2.2 then the C-wave should not top before gold reaches at least 5 000 US dollars per ounce. A move to all time highs in the US dollar price of gold during the this or the next eight year cycle would confirm that gold is indeed in the most aggressive phase of its secular bull market which began in the late 1990s. Large C-waves are characterized by blow off tops at the end of the advance which usually end up producing a bubble. During the parabolic phase, the price can extend extremely far from the long-term mean and so it is not unforeseeable for gold to reach 10 000 US dollars per ounce as it is only another 100 per cent away once the price reaches 5 000 US dollar. If the large C-wave advance materializes, it is likely to produce one of the greatest bubbles in history unless governments intervene – which would not be out of the ordinary for gold.

As a conclusion, gold's cyclical outlook is positive as long as price remains above the 2015 eight year cycle low of roughly 1 045 USD. Even then the downside is limited due to fundamental supply and demand reasons. A lower low below the 1 045 USD mark would severely mess up the multiyear cycle count in gold unless gold were to continue lower until the next eight year cycle low – which the fundamentals do not support, and it is therefore also an unlikely scenario. Sentiment has moved from clear bear market pessimism towards a level associated with bull markets. This means that large long-term buyers should be out there to support the price of gold over the next few years at least. With all evidence at hand, gold should produce at least one higher high above the 2016 high of 1 375 USD before the current eight year cycle tops. In a free market environment, gold should also move towards all time highs before the eight year cycle top is due sometime before 2024/2025.

Another contributing factor for the argument that gold's price will head higher during this eight year cycle and the next is the situation in the global economy and the monetary policies which are likely to follow from an economic slowdown. A currency crisis is very likely at this point although the timing remains unclear. The currency crisis could take place during the next global recession which, as was discussed in chapter 4.3.1, is close. Maybe as close as in a few years from now. There are already major cracks in the global economy

with growth in large economies showing signs of slowing and many smaller domestic currencies such as the Argentinian peso, the Turkish lira and the Iranian rial failing.

The Fed has signalled a yearlong pause on the interest rate hikes, but the US bond market is already pricing in a rate cut over the next year. The Fed has not raised the Fed funds rate enough to stimulate the US economy out of a recession by simply cutting rates – the primary tool of central banks to stimulate the economy. If the US were to counter a recession before the Fed is able to raise interest rates to at least three per cent – historically it has required three to six per cent of rate cuts to stimulate the US out of a recession – the Fed will have to resolve back into quantitative easing. The previous rounds of Fed's QE spurred asset inflation in the US housing market and the stock market but this time the stimulus may not be as contained.

Although the previous rounds of QE did not raise the headline inflation measures, the Consumer Price Index, it does not mean that the next rounds will not cause inflation in consumer prices. Inflation comes when people begin to spend. With the Fed having to resolve into QE – which was deemed temporary and exceptional – once again to stimulate the US economy out of a recession at some point the public will get worried not only on the economy but also the US dollar and its purchasing power. In a currency crisis, hyperinflation cannot be ruled out. Although not quite hyperinflationary yet, the Turkish lira is a good example of what can happen to a currency in a short period of time. In August 2018, the Turkish lira plunged over 26 per cent against the US dollar in just three days. During the same time period, gold rose over 36 per cent against the lira. In Turkey, gold has been acting as it should during a currency crisis – hedging against inflation. From the bottom in 2013, gold has gained over 280 per cent against the Turkish lira.

As was discussed in chapter 3.1.1, history tells that reserve currency status' do not last forever. This is inevitably the case with the US dollar of which reserve currency status was acquired at the end of the Second World War. Interviewees were unanimous in the opinion that the US dollar will lose its role as the dominant reserve currency over the next 20 years to the extent that other rivalling systems and options will take firmer hold. Majority of the interviewees agreed that the US dollar will witness a large-scale currency crisis over the next 20 years which will affect the price of gold favourably.

The currently unstable economic environment across the globe should be good for gold. Ultimately the biggest price driving factor for gold is gold's monetary demand and there are already signs of gold remonetisation. China, Russia and other eastern nations have been accumulating large quantities of gold at an increasing pace ever since the financial

crisis of 2008. In addition, gold repatriation is taking place in many European countries. The internationally supported Basel III agreement views physical gold a zero risk asset along with physical cash. Many nations have taken steps to ease transacting with gold by setting up new gold exchanges and developing infrastructure to support gold trade.

Something big is brewing in the world's economic sphere and the gold sector. All of the evidence suggests that countries around the world are preparing for a major shift of some form. Based on the reasons mentioned throughout this report, the major shift is likely to materialize in the currency markets. The collapse of the US dollar would have devastating effects on the US economy as the purchasing power of the world's dominant nation would also collapse. However, Mikael Maloney pointed out in his online documentary series called Hidden Secrets of Money that "Wealth is never destroyed. It is merely transferred" (Maloney 2013). This means that although the collapse of the US dollar would crush the purchasing power of the US that purchasing power would transfer into something else which in the light of the evidence is likely to be gold.

So far, the US has been the dominant alpha male across the world but there are signs of other countries trying to increase their global influence. China is getting ready to play hardball with the US which has already manifested in the trade dispute between China and the US. China has been following the US' footsteps on how the US became a globally dominant superpower of the 20th century – make countries dependant on your exports after which make those countries dependant on your currency. To overtake the US as a globally dominant superpower, China needs to make countries dependant on the yuan – or the currency of their selection. One scenario would be for China to announce a new international gold standard along with key allies such as Russia, Iran, Turkey and Kazakhstan, refuse accepting payments in fiat currencies and issue debt to countries which are unable to pay with gold – just like the US did during and after the Second World War.

Whether gold will be remonetized over the next 20 years remains to be seen. However, this does not alter the fundamental supply and demand picture nor the cyclical outlook. Both the fundamental and the cyclical analysis supports higher gold prices even if the world's geopolitical atmosphere remains constant. With the economic problems in Europe, ongoing currency crises across the emerging markets, lack of stimulative options amongst central banks around the world, and with the US continuing to run records deficits during an economic expansion, there is plenty of tinder for a severe global crisis during the next global economic contraction. The monetary system reform scenario would be a huge opportunity for gold investors as long as some of the risks do not materialize.

The biggest risk for all gold investors is large scale global confiscation of physical gold. The monetary authorities do not want people to hold a deflationary asset such as gold which does not stimulate economic growth but instead takes money out of the economy. Gold confiscations have happened across the world throughout time and so large scale and internationally coordinated gold confiscations are not off the table completely. However, the moves towards easier gold transactions and the fact that Russia is making gold bullion exempt from Value Added Tax suggest that the world is at least divided on gold which puts the global confiscation theory in jeopardy.

Also, a globally agreed alternative for a gold standard could set back the, by Paul Volker's words 'inevitable', monetary system reform for a few decades. The global monetary authorities could back up currencies with the SDR which would be most likely negative for gold. Whether China and Russia along with other gold accumulating nations would be willing to accept such a system remains uncertain. If China along with its trade partners was to begin transacting in their own gold-based monetary system, it would be a vote of no-confidence against other forms of payments which means that the SDR backed currencies would most certainly face inflation.

Another smaller risk for the price of gold over the next 20 years would be a major breakthrough in the extraction of gold. This cannot be ruled out as the mining sector has already witnessed substantial breakthroughs during the 21st century. For the time being, the risk of a major breakthrough in gold extraction remains relatively low at least for the next five to ten years. There have not been significant changes in the way how gold mining exploration is conducted. With gold prices subdued from the highs of 2011, creative investments in the sector are absent. Adopting new technologies takes time amongst large mining companies and so the 'peak gold' argument stands firm at least until new technologies are invented and implemented which could take decades to materialize.

All in all the analysis for gold's upcoming 20 years is extremely positive, no matter which aspect is analysed. On the long-term gold prices are poised to rise in all currencies whilst the shorter-term remains uncertain with the contingency brought by the US dollar. Gold's remonetisation during the next 20 provides the biggest upside potential for gold investors and in such scenario, the safest way of owning the yellow metal would be physically in bullion. Cycles are natural and occur everywhere. By the basis of the type of cycles analysis used in this report, the cyclical outlook for gold is also extremely positive. Even though political resistance against a gold standard is present for the time being, it does not explain the movements taken by eastern central banks towards gold accumulation.

China and its partners could announce a new gold standard in a way that they no longer accept payments in other than physical gold or gold-backed currencies. This would rapidly increase the demand for gold as countries with small gold reserves would scramble to acquire sufficient amounts of gold to keep up their trade deficits with China. By doing so, China would rapidly increase the wealth of the nation and the people of China. A move by China towards a gold standard would also have a meaningful impact on China's trust issue. Whilst highly speculative, this scenario is backed by solid facts.

Considering that gold has had value for over 5000 years in the eyes of human beings and with new uses for gold in technology being discovered consistently it would be absurd to assume that gold would lose its value completely. In light of the evidence, gold is money and offers great potential over the next 20 years. If history is to be trusted, one thing is for certain: gold will be the "last man standing" no matter what happens.

5 Discussion

When I set out to write the report, I would have never believed to draw a causal relationship between a stolen kidney in China and gold. The report was a large project due to the extensive variety of approaches used. All the scenarios examined in the report seem to align with each other which gives the report a deeper and more reliable aspect. Having researched gold for the past three years, the result of the market analysis was not that big of a surprise to me personally. What was surprising, was how well the pieces fit together.

Since the report dug deep on multiple areas, from the monetary aspect to cycles analysis, supply and demand fundamentals all the way to market efficiency and manipulation, the result of the analysis is to be considered trustworthy. Risks from multiple perspectives were outlined, assessed and evaluated giving an important critical aspect to the analysis. Apart from a technological breakthrough or gold confiscations, the future of gold looks solid no matter which aspect is examined. The gold market has been lacking interest ever since the top in the US dollar price of gold was reached in 2011. This combined with the fact that the world went off the gold standards almost 50 years ago meant that some resources available on the topic were severely outdated which in turn meant that a lot of loose ends needed to be tied together to create a picture of the whole gold market.

All in all, I feel that the project was successful, and I was surprised to receive such a welcoming response from the interviewees. Due to time constraints, I did not manage to get all the things I wanted on this report. Since gold is one of my passions, I am sure to do follow ups on this report in the future. Especially the manipulation of the gold market is worth further research, as it could be something that the enforcement agencies such as the CFTC might be interested in. To me, it seems naïve to think that the CFTC would not be aware of the developments in the metals markets including the premarket dumps, but as no official commentary has been issued on the topic the situation remains as it is.

Originally the report was supposed to be released by the end of 2018, but with the benefit of hindsight, it was a good decision to push the release date into the spring of 2019. The end of 2018 and the beginning of 2019 were extremely intense for the precious metals markets as news about new manipulation cases broke out, the situation with Venezuela's gold reserves hit the headlines and the palladium market witnessed an epic run and the inversion of the palladium futures curve.

I would have wanted to interview people from the World Gold Council as their data has been inconsistent and they would have probably been able to address many of my questions. There seems to be somewhat of a mistrust developing towards the old authorities such as WGC, LBMA and the London Loco amongst the gold community. The opaque nature of the gold market has created mistrust between smaller market participants and these entities which is most definitely hurting the progress of the gold market.

For me, the most disturbing fact which came apparent during the research of the report was the lack of understanding, amongst the academic sphere, of gold's history and especially the monetary importance of gold. Also, the fact that in the past there have been cases, such as the murder of the Libyan dictator Muammar Gaddafi and the murder of Saddam Hussein, where military actions have been conducted when the US dollar hegemony has been threatened was an interesting yet disturbing discovery. It will be interesting to see how the increasing central bank demand for gold affects the financial markets around the world and whether the world will see a new currency linked to gold in the near-term future which based on my research is somewhat likely.

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Appendices

Appendix 1. Vocabulary

All In Sustaining Costs (AISC): The cost at which a mine can remain operational

Bearish: To be pessimistic on the future of the asset in question

Bullish: To be optimistic on the future of the asset in question

Bullion: Gold or other precious metals in physical form such as coins or bars

Contrarian: A trader who aims to buy and sell at turning points rather than buy or sell into an existing trend

Cyclical trend: A primary trend shorter than a *secular trend*. Usually lasts for multiple years depending on the market.

Dovish: Easing monetary policy stance where rates are usually cut or kept unchanged

Fiat currency: Currency which is not physically backed

Four nines: Physical gold which is 99,99 per cent pure gold

Hawkish: Tightening monetary policy stance where rates are usually raised

High grade: Ore with high concentration of the miner being mined

Monetary policy: Macroeconomic policies conducted by central banks

OTC (Over The Counter): Securities trading conducted between two or more parties without a centralized exchange

Overbought: Situation where the asset being examined is looking positive from a technical analysis point of view

Oversold: Situation where the asset being examined is looking negative from a technical analysis point of view

Safe haven asset: An asset which is seen to provide stability during times of distress

SDR (Special Drawing right): Foreign reserve asset issued by the International Monetary Fund

Secular trend: A primary trend which can last multiple decades

ZIRP: Zero Interest Rate Policies

Appendix 2. Larger images of premarket attacks on gold futures

Chart 14. 5 second candle COMEX gold futures 07:00-09:20 on 15.6.2018 (IB 2019)

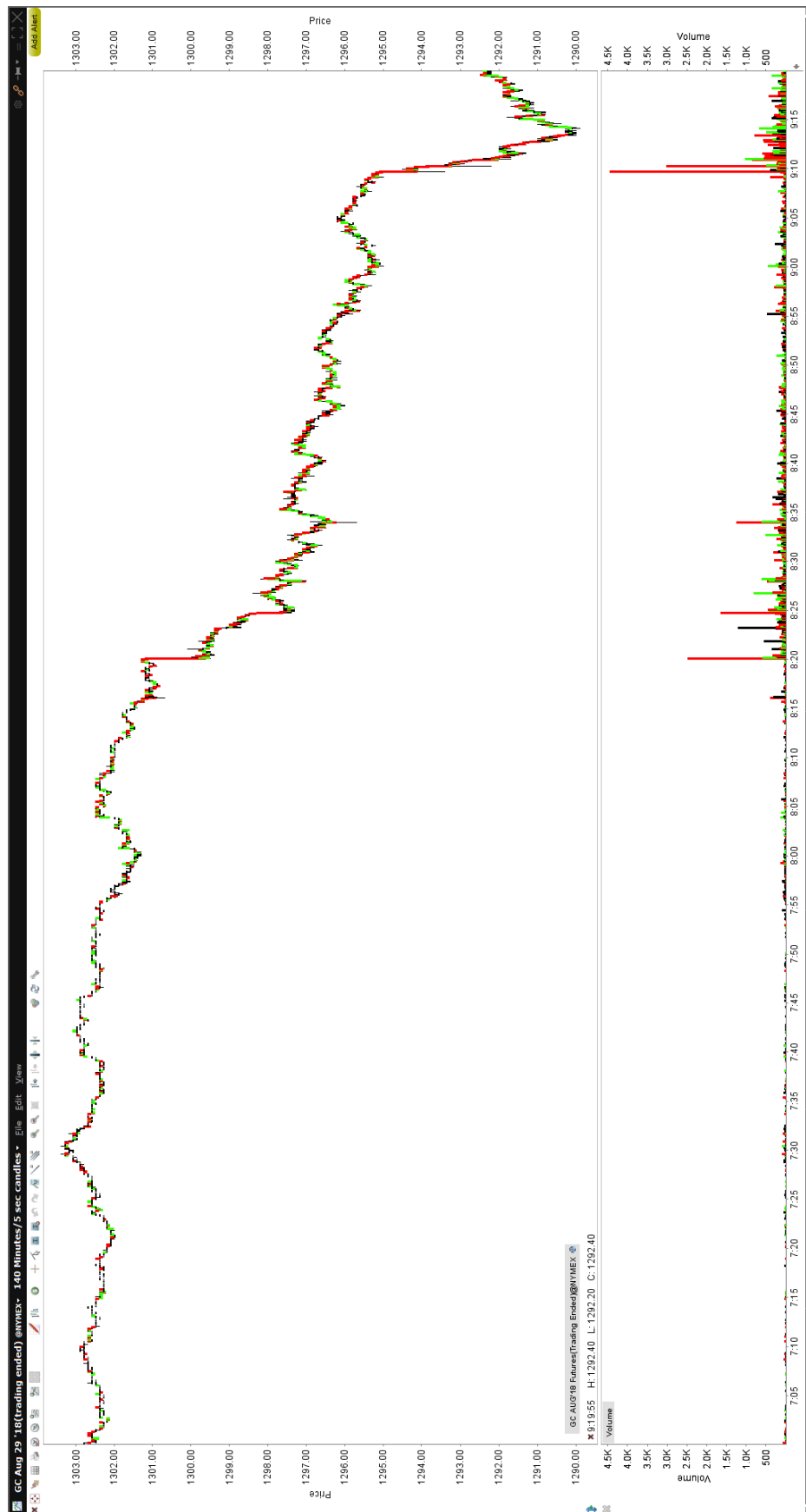


Chart 15. 5 second candle COMEX gold futures 06:00-08:20 on 16.5.2018 (IB 2019)

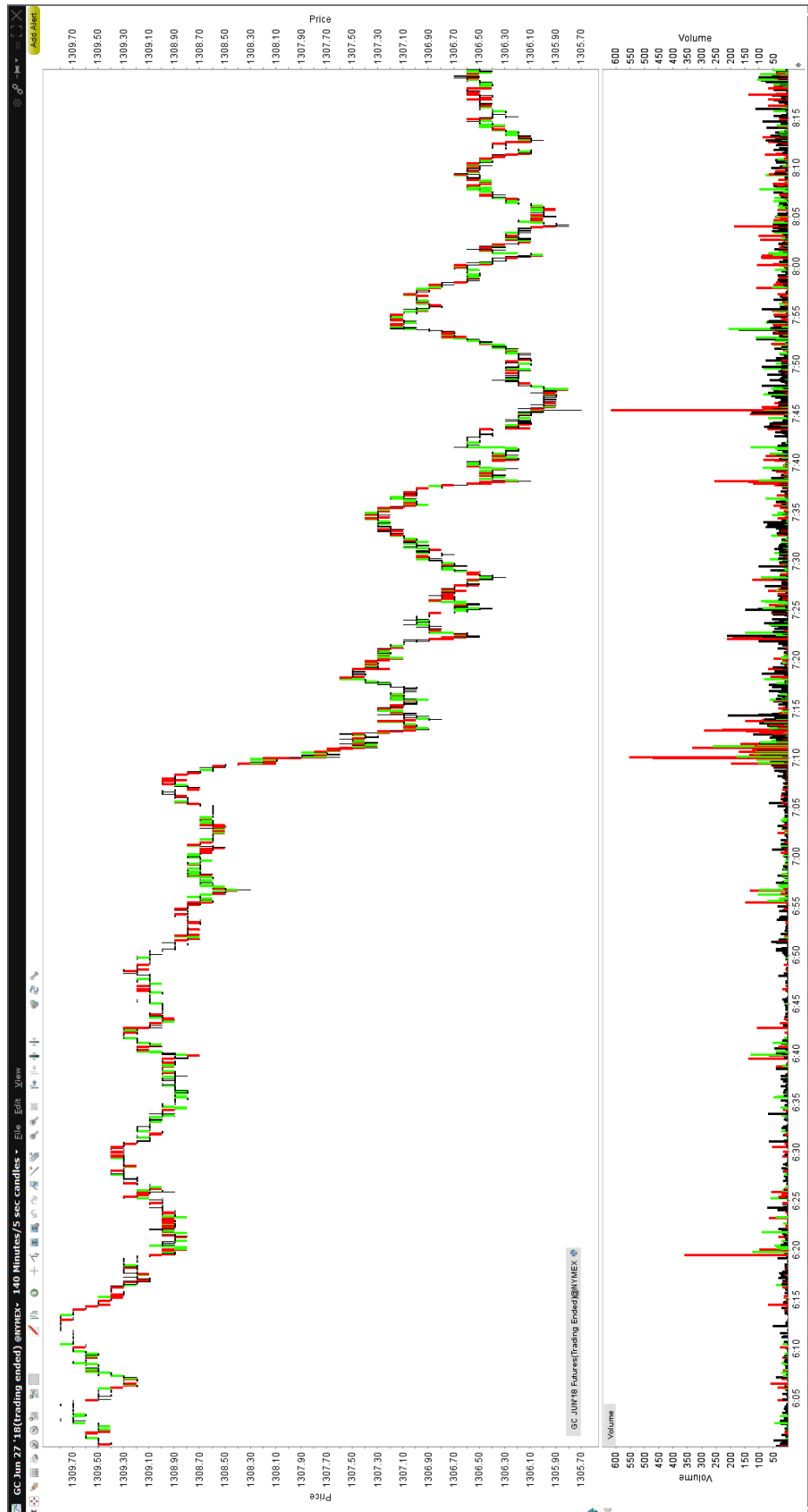


Chart 16. 5 second candle COMEX gold futures 08:00-10:20 on 17.7.2018 (IB 2019)

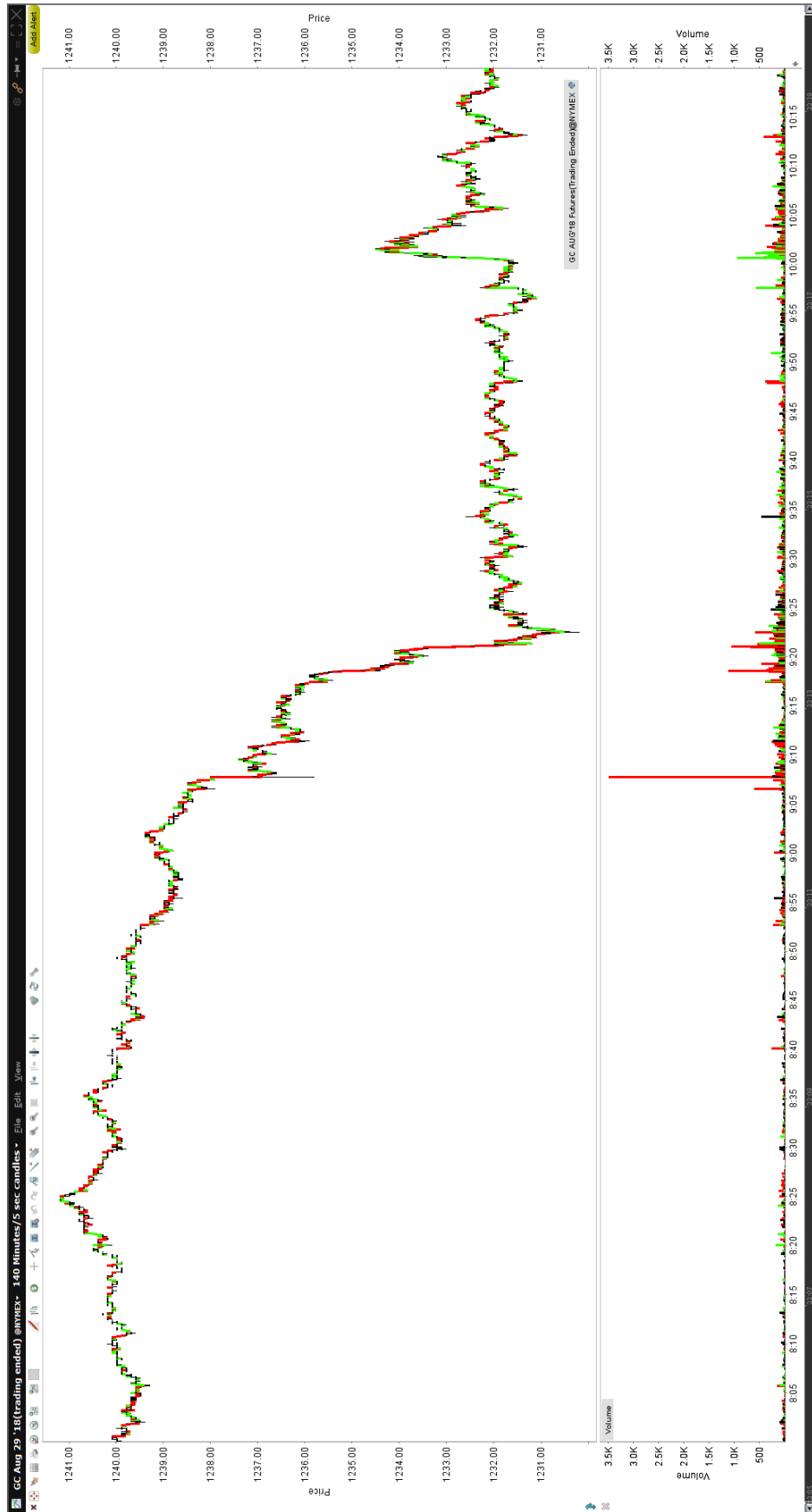


Chart 17. 5 second candle COMEX gold futures 09:00-09:20 on 15.6.2018 (IB 2019)

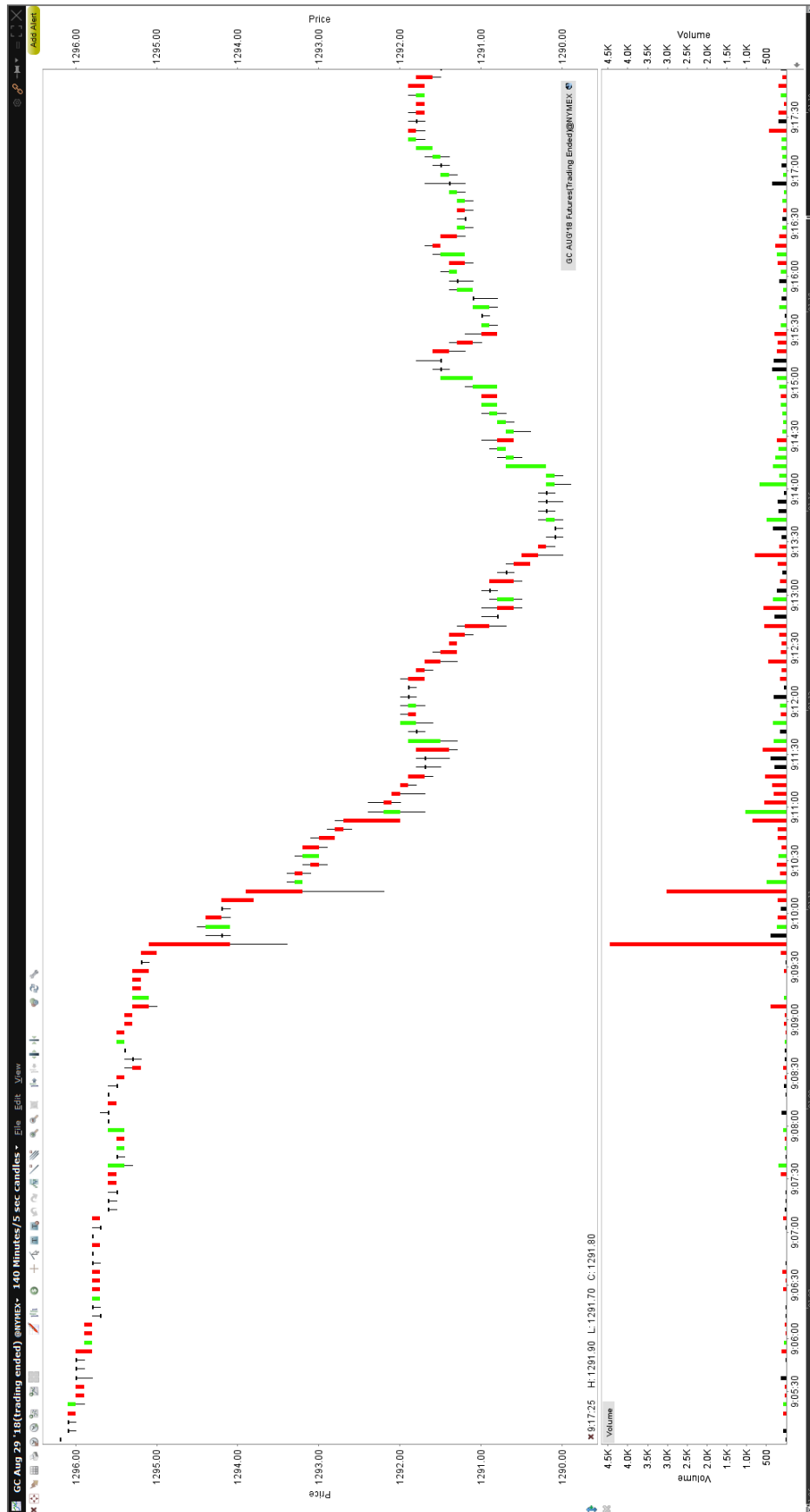


Chart 18. 15 second candle COMEX gold futures 07:20-13:30 on 15.6.2018 (IB 2019)

