

A Brief History of the Monetary System

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Dear Investors,

Money is something so everyday that its remarkably ingenious nature can easily go unnoticed. Current monetary systems are quite complex and, consequently, poorly understood by the vast majority of people, even among investors.

In this letter, we offer a brief overview of how the world arrived at the current monetary system, with central banks and floating exchange rate regimes, and some reflections on what this system means for our investments.

Acknowledging upfront the unusual nature of this topic among the subjects we typically cover, it arose because we recently approved an investment thesis in a company listed on the London Stock Exchange. The need to deal with currency conversions and exchange rate risks sparked our curiosity about this historical perspective.

A Brief History of Money

Before the existence of currency, all commercial activity was conducted through the exchange of goods: a basket of bread for a piece of meat, an ox for two sheep. Each transaction was negotiated individually and came with two major difficulties: the first was that, if you had only an ox to trade, you would have to find someone who had the product you wanted to buy and, at the same time, wanted an ox; the second was that you would need to purchase a volume of goods equivalent in value to an ox, which, at least while alive, is an indivisible unit of value.

The first evolution of this clumsy system was to find a product that was of common interest, easy to store, and easy to divide into the quantities needed for each commercial transaction. Various materials took on this role in antiquity. In the early Roman Empire, salt was used as a medium of exchange for a time. Used by everyone as a seasoning and to preserve meats and fish, easy to store, divisible in any quantity, and reasonably valuable at the time, salt met all the requirements to serve as an intermediary commodity in commercial activities.

Even before the beginning of the Christian calendar, these intermediate commodities began to be replaced by precious metals, especially gold, which has been a universally valued currency ever since. A series of characteristics made gold the material chosen as the universal medium of exchange. It is universally desired and rare enough that small quantities represent significant value. It is divisible in any quantity and infinitely durable. Although it is possible to create metal alloys by mixing it with other metals as a form of counterfeiting what should be pure gold, methods for testing its purity have been known since antiquity, as evidenced by a tale about Archimedes, the famous ancient mathematician.

In the 3rd century BC, the Greek king Hiero II commissioned a goldsmith to forge a gold crown, providing him with all the gold needed to create the piece. When the crown was delivered, suspicions arose that the goldsmith had stolen some of the gold for himself and replaced it with silver. The crown weighed exactly the same as the gold bar dedicated to its creation, but the purity of the metal might have been compromised.

Not wanting to destroy the new crown to test his suspicion, King Hiero II asked Archimedes to find a way to test the purity of the gold without damaging the object. After weeks of thinking about the problem, while bathing in a tub, Archimedes noticed that the volume of water displaced when one entered the bath was equal to the volume of the submerged object, regardless of what material it was made of. According to legend, it was at that moment that he understood he could use this principle to solve the king's problem and, in his excitement, ran naked through the streets shouting "Eureka!" — the Greek word for "I have found it!"

The test developed by Archimedes is quite simple. Since gold has a density roughly twice that of silver, an object made of pure gold has a smaller volume than one made of gold and silver. So Archimedes placed King Hiero II's crown in a container full of water and measured the volume of water displaced. He then took

a bar of pure gold of the same weight as the crown, placed it in another container, and made the same measurement. Comparing the two measurements and finding that the crown had displaced more water than the pure gold bar, the crime was proven and the goldsmith punished.

This story also illustrates how ancient gold's position as a symbol of material wealth truly is. Curiously, to this day the primary use of gold is in the manufacture of jewelry and decorative objects. Its value remains high not because of any particularly large industrial use, but because it continues to be desired by people all over the world. Note that it was not its status as currency that made gold valuable — rather, it became a store of value precisely because it was already something valuable beforehand. Some primordial instinct makes it admirable and associates it with wealth.

Until the 18th century, coins containing predetermined quantities of precious metals remained the primary form of money used in everyday commerce. From that point onward, they were gradually replaced by paper money — printed notes with no intrinsic value, but which represent a certain value and are widely accepted. The paper money still used today follows this same concept.

The Gold Standard

Paper money replaced metal coins in everyday life for practical reasons. The purity of metals needed to be tested, transferring large sums meant having to transport heavy loads of metal, and there were security concerns both in transporting and storing metal coins.

The solution found was to store precious metals in specially built bank vaults and replace the circulation of metals with notes issued by the institution responsible for their storage. Each note represented a certain value and could be converted back into precious metals in kind — usually gold or silver — upon request to the issuing institution. Initially, private banks even issued gold-backed currencies that were widely accepted in the market. Later, the central banks of each nation became the exclusive issuers of paper money, a role they maintain to this day.

Initially, central banks maintained as a general practice the backing of currencies with gold — that is, they guaranteed the convertibility of the paper money they issued into gold. This mechanism, known as the gold standard, had two main advantages. The first was ensuring that central banks could not print paper money indiscriminately to cover public expenditures, indirectly imposing fiscal discipline on governments. The second was that gold functioned as an international medium of exchange. Since the currencies of the major countries were convertible into gold at fixed rates, the exchange rates between those currencies were also fixed. Under this system, trust in central banks was not required, and the prices negotiated in imports and exports were, in practice, determined in gold.

Even under the gold standard, governments and central banks occasionally committed excesses, suspending the convertibility of their paper money during periods of fiscal deficit that weakened the position of gold reserves actually available in central bank vaults. The ultimate test came during the First World War, a period in which several countries financed war expenses with printed money lacking adequate gold backing and unilaterally suspended the convertibility of their currencies. As an inevitable consequence, this move caused a sharp rise in inflation.

The decades following the First World War were marked by instability in the international monetary system, with several countries oscillating between adopting and abandoning the gold standard. The excessive issuance of unbacked currency caused confidence crises in currencies, which in turn triggered bank runs as people sought to exercise their right to convert paper money into gold bars. When this happened and central banks found themselves without sufficient reserves to satisfy physical gold withdrawals, convertibility rights were suspended, further deepening distrust in central banks as guardians of their currencies' value. This climate of instability persisted until 1944, when the Bretton Woods Agreement was signed.

Bretton Woods (1944–1973)

The United States, having already secured its position as a post-war world power and holding two-thirds of the world's gold reserves at the time, led the negotiation of a new international monetary system to regulate trade relations among 44 countries. Under this agreement, each country's central bank was required to guarantee the convertibility of its currency into US dollars at fixed rates, and the dollar would be convertible into gold at the fixed rate of USD 35 per ounce. In practice, it was a return to the gold standard with the US

dollar as an intermediary currency, placing the United States in the privileged position of issuer of the currency that would serve as the international store of value.

The great motivation behind the agreement — which secured the adherence of several countries and sustained it for a long period — was the understanding that fluid international trade was essential to maintaining world peace. This lesson had been learned from the two World Wars, both of which were motivated by economic conflicts amplified by protectionist measures seen as unfair by countries prevented from accessing certain markets. For dynamic international trade to exist, an organized and stable system of currency conversion was necessary. The international monetary system created by the Bretton Woods Agreement achieved this objective, offering some protection against currency manipulation by central banks, one of the tools traditionally used to influence export and import flows.

The Bretton Woods Agreement remained in force for several decades, but began to show signs of weakness at the end of the 1960s. In the post-war years, the United States maintained a continuously deficit trade balance, largely due to financing of allied countries and American military operations around the world. To sustain this deficit, the US central bank printed more and more dollars, despite the gold convertibility obligation fixed by the Bretton Woods Agreement. By 1970, American gold reserves were sufficient to honor the conversion of only 22% of the dollars in circulation worldwide, intensifying the rush to convert dollars into gold. In response to this movement, which would soon make convertibility unsustainable, in 1971 US President Richard Nixon unilaterally announced the abandonment of the gold standard. From that point on, the American central bank would no longer convert dollars into gold.

The Floating Exchange Rate Regime

After the abandonment of gold convertibility by the United States, there were some attempts to return to a fixed exchange rate system based on the gold standard, but these efforts were unsuccessful. In 1973, Japan and European countries decided to adopt the floating exchange rate regime, in which the value of their currencies would be freely determined by supply and demand. The end of the Bretton Woods Agreement was officially recognized in 1976, and in the following years most developed nations adopted the floating exchange rate regime. Brazil took somewhat longer to adapt to the new standard, adopting floating exchange rates only in 1999.

A discussion of which monetary system is best is not straightforward. Under the gold standard, the founding premise is that the world's gold reserves would determine how much currency is available for economic activity. Since gold is finite, if the global economy were to grow at a faster pace than the expansion of gold reserves, the result would be deflation, as a greater quantity of material goods produced by the global economy would be represented by the same amount of gold. This would lead to a constant appreciation of gold, which makes no sense in itself.

About half of all the gold in the world today is in jewelry and decorative objects, and about a quarter in bars and coins. Less than a fifth is held in official value reserves. If gold were constantly appreciating not because of the value attributed to the metal itself, but because of its use as currency backing, the inevitable consequence would be that the value of gold, at some point, would exceed its real utility for people, and we would stop using gold for those purposes, simply storing it in central bank vaults, with bar after bar of gold sitting idle there at all the cost required to keep it secure.

Under the floating exchange rate regime, the premise is that the value backing of a country's currency consists of the assets existing in its domestic economy. Although harder to measure than the quantity of gold in central bank vaults, it makes sense that a country's economic output has value in itself, regardless of how much gold the country possesses. The point is easily understood by imagining a country with vast oil reserves but no gold. Preventing that country from issuing currency due to the absence of gold in its vaults defies common sense.

However, the problem remains of how to determine the value of currency issued by a central bank that has the power to print money indiscriminately. The solution under this regime is to leave pricing to the market. Just as the price of any commodity is defined by the momentary balance between supply and demand, driven by whatever factors exist, the exchange rate is now determined in the same way. Indirectly, the value of a currency depends on the strength of its country's economy, the results of its international trade balance, and its government's public finances, since the main assets held in foreigners' reserves are typically fixed-income government bonds. Although less objective than the gold-backed fixed exchange rate regime, this floating pricing model is the standard under capitalism.

The System's Impact on Investments

The first point of attention to consider is that any international investment will carry the risk of exchange rate fluctuation. In the short term, the rate can oscillate without any justification derived from fundamentals. A momentary imbalance in international trade accounts, problems in other economies requiring capital repatriation, or simply speculative movements around the currency can cause exchange rate variations. As a result, there is always a degree of randomness around currency risk.

In the long term, currencies should maintain a certain parity relationship, with exchange rates varying as a function of the inflation differential between each currency. The underlying concept is that the exchange rate should be defined by the real purchasing power of currencies, because if it were possible to buy a gold bar in currency A and sell it in currency B and the exchange rate between that pair allowed for profit, this would represent an arbitrage opportunity that investors would exploit until the flow of conversions from currency B to currency A was sufficient to rebalance the exchange rate to the neutral point. With inflation being the quantitative measure of how much each currency depreciates, if currency A suffers inflation while B does not, the exchange rate must adjust so that more of currency A is needed to buy the same quantity of B.

This parity relationship does not solve the problem of projecting exchange rates, because the task of projecting inflation levels for the two countries in the currency pair remains. The estimate is difficult because each country's inflation depends heavily on the amount of currency issued by its central bank, which in turn has a strong relationship with the country's fiscal balance (government revenues minus expenditures). As we Brazilians know well, a country's level of spending is heavily influenced by political considerations that are difficult to predict.

Beyond the difficulty in projecting inflation, exchange rates can remain off their theoretical equilibrium point — determined by the parity relationship that considers inflation differentials — for years, just as a stock can trade for years at a price far from its fair value. International investments therefore add an extra layer of risk: in addition to the fluctuation in an asset's price, there is the fluctuation in the exchange rate. As a result, the ideal moment to sell an asset abroad may not coincide with the best moment to repatriate the capital — that is, to convert the sale proceeds in foreign currency back into Brazilian reais.

The choice left to investors is to either accept this risk as an increase in the price volatility of foreign investments in local currency, or to enter into currency purchase or sale contracts in the opposite direction of the investment flow to neutralize the effect of currency fluctuation (a hedge) — an arrangement that, in practice, involves paying a small fee to protect against exchange rate variation.

When the investment thesis has no relation to the exchange rate, the best option is generally to execute the *hedge* and factor the additional cost into the margin of safety required in the purchase price. This is what we will do in the case of our investment in England, mentioned at the outset.