

## **Why Does Money Supply Growth Not Push Up Prices?**

Although five years have passed since the Bank of Japan (BOJ) started unconventional monetary easing, the prospects are dim for achieving the inflation target of 2%. The reason why prices do not rise despite the BOJ's continued initiative to significantly increase money supply is because money supply growth is not the cause but the result of economic expansion and inflation. On this premise, there is no chance of pushing up prices by increasing money supply. The BOJ's excessive monetary easing is problematic not only in that it is undermining the stability of the central bank's balance sheet but also in that it is gradually making the sound financial system vulnerable.

### **Problems with the Unconventional Monetary Easing**

The BOJ has committed itself to maintaining the unconventional monetary easing until it sees the prospect for the inflation rate being stabilized at 2%. However, there are four problems with the unconventional monetary easing as follows.

The first problem is that the target price index (consumer price index) includes imported products such as gasoline and heating oil. As a result, when an upsurge in the crude oil price raises the consumer price growth rate to 2%, that would mean the achievement of the inflation target even if real income declines as a result.

Second, the last time that the consumer price growth rate was around 2% was during the bubble economy period in the latter half of the 1980s. At that time, wages and prices continued to rise against the backdrop of high economic growth. In the 12 years to 1992, the annual average growth rate was 2.5% for prices and 4.5% for wages. The inflation rate of 2% is a figure usually seen when economic growth is as strong as during the bubble economy period.

Third, there is a misunderstanding as to why Japan has remained trapped in deflation until now. One major cause of the deflation is the Japanese economy's loss of the capability to offset the impact of a rise in the cost of importing goods, mainly oil, by raising export prices. As the economic growth rates of emerging countries rose due to globalization, the crude oil price jumped five-fold between 1999 and 2013, boosting dollar-denominated import prices steeply. However, dollar-denominated export prices did not rise as much, since the export price of electrical machinery, whose share of exports was large, roughly halved. Moreover, in order to slash excessive debts and enhance

profitability, companies reduced the number of regular workers while increasing the number of non-regular workers with low wages. As a result, households lost hope for the future, a situation which created a vicious circle of cautiousness about consumption dampening domestic demand. These factors caused the deflation.

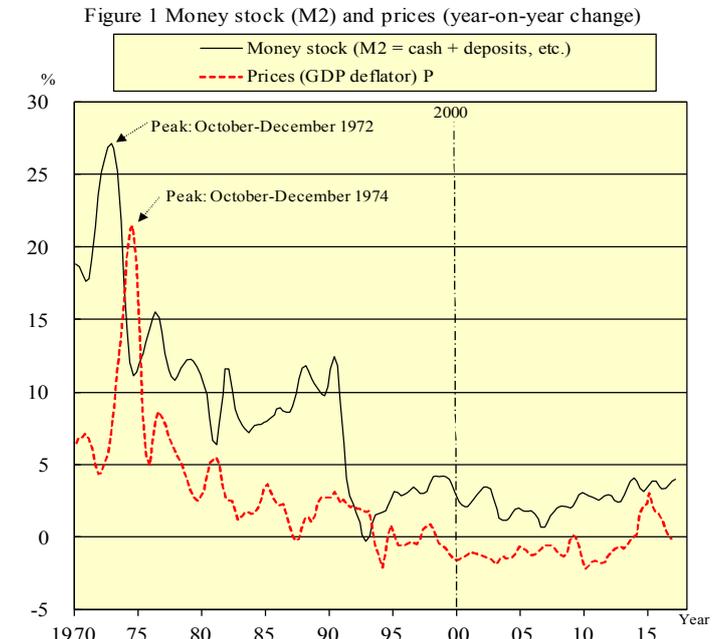
Fourth, the unconventional monetary easing policy is based on the misconceptions that increasing money supply significantly through a thorough pursuit of monetary easing will lead to inflation and that if the BOJ continues to predict inflation, prices will actually rise. These two misconceptions are particularly important factors that caused the BOJ to resort to this risky policy.

**Problem with the Idea that A Significant Increase in Money Supply Leads to Inflation**

Economic experts known as monetarists have maintained the view that if the growth rate of the money stock is increase (reduced), the inflation rate will rise (fall) after a while. The money stock refers to the aggregate volume of currency supplied from the financial sector to the overall economy. The stock is classified by the extent of the money covered into M1, M2 and M3 (“M” stands for money supply or money stock).

M1 represents the total sum of cash and demand deposits (current account deposits, ordinary deposits, savings, deposits at notice, separate deposits and deposits for tax payment). M2, which is the most popular money supply yardstick, represents M1 plus time deposits held at domestic banks and other institutions. **Figure 1** shows the relationship between the money stock (M2) and prices (both are expressed in terms of year-on-year change) in Japan. From 1960 through the 1980s, when the money stock (M2) increased, prices rose one to two years later.

As this correlation was observed widely in other countries as well, monetarists’ view that an increase in



Notes 1. For the whole of the covered period, the average correlation coefficient between prices and M2 is 0.679. The highest coefficient recorded in the period from 1970 to 1999 was 0.886, which was a coefficient of correlation between prices and M2 six quarters earlier. The highest coefficient recorded in the period from 2000 to 2016 was 0.447, which was a coefficient of correlation between prices and M2 in the same quarter.  
 2. The correlation coefficient is an indicator of closeness between two variables. Generally speaking, a coefficient lower than 0.4 is considered to indicate the absence of correlation and a coefficient between 0.4 and 0.9 is considered to indicate a weak correlation. A coefficient of 0.9 or higher is considered to indicate a strong correlation.

Source: Cabinet Office, Bank of Japan

the monetary stock leads to inflation became convincing. In Japan, too, the number of people feeling sympathy with this view temporarily increased because of the perception that economic bubbles were created due to the failure to appropriately control the money stock (M2) at the time of the economic overheating caused in the first half of the 1970s by the “Japanese Archipelago Remodeling Plan” and at the time of the second oil crisis.

If monetarists’ view is to be believed, explanations must be provided as to why in the past it took one to two years from an increase in the money stock (M2) before prices rose. Explanations are also necessary as to why the correlation has not been so close or there has been little time lag since the 2000s.

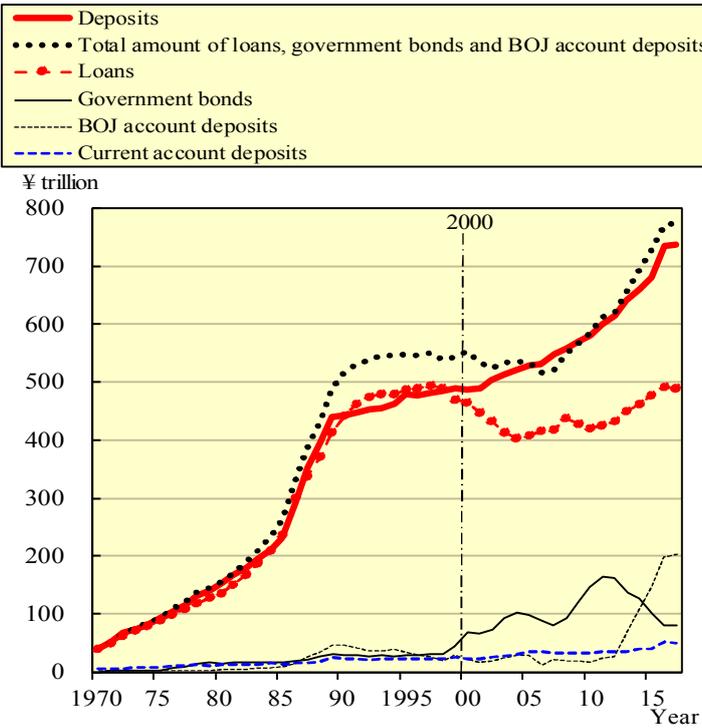
The inconsistency of the correlation between the money stock and prices reflects the presence of two problems with that view’s assumptions concerning these two items.

First, money used for the settlement of goods and services transactions, namely cash and current account deposits, accounts for only a small part—10% to 20%—of the money stock (M2). The remaining 80% to 90% of M2, such as time deposits, ordinary deposits and other demand deposits other than current account deposits, continue to be held in accounts and remain unused for transaction settlements. Moreover, the amount of money stock (M2) is almost equal to the total amount of debts on financial institutions’ balance sheets, and it also represents the total amount of assets. In fact, the money stock (M2) as mentioned by monetarist refers to

the total amount of assets, including loans, securities and deposits in the banking sector. **Figure 2** shows a comparison between deposits (sum of demand deposits and time deposits) in the banking sector and loans, government bonds, current account deposits held in accounts at the BOJ (BOJ account deposits), etc.

The amount of deposits representing the total sum of demand and time deposits was almost equal to the amount of loans until around 2000. Later, the amount of deposits was almost equal to the

Figure 2 Relationship between deposits in the banking sector and the total amount of loans, government bonds and BOJ account deposits



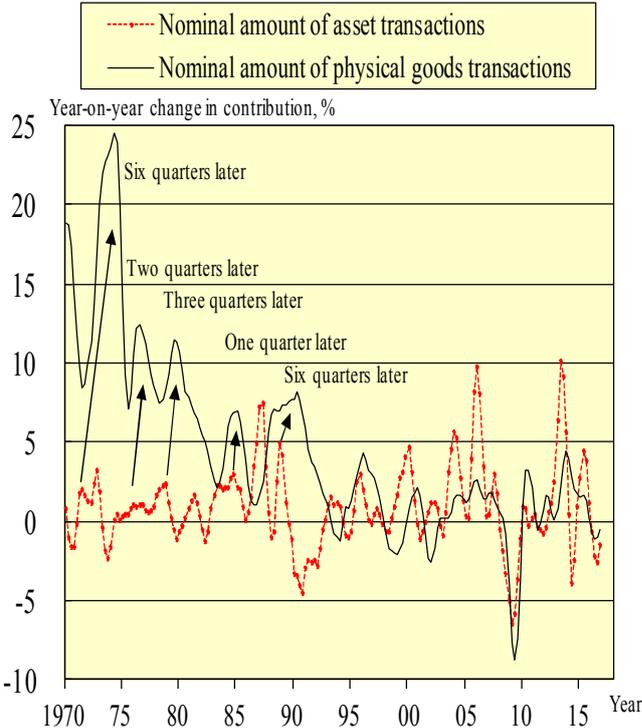
Source: Bank of Japan

amount of government bonds plus the amount of BOJ account deposits. There have been disparities between the amount of deposits and the amount of loans since the 2000s because financial institutions started to partially replace loans with government bond investments. Since 2013, the amount of government bonds held by financial institutions has decreased while the amount of BOJ account deposits has increased as a result of the BOJ’s unconventional monetary easing.

The other problem with monetarists’ view is on the price side. If the money stock is to be defined as money used for settlement purposes, we must include not only goods and services transactions but also asset transactions, such as stock, land and securities transactions. Although financial institutions have recently refrained from providing loans for speculative land transactions, some operating funds were allocated to asset transactions in the past.

**Figure 3** shows the nominal amounts of asset and physical goods transactions (both are expressed in terms of year-on-year change in the contribution to the total amount of transactions). The nominal amount of asset transactions represents the total sum of asset, stock and bond transactions, while the nominal amount of physical goods transactions includes transactions of goods and services produced. From this figure, we can see that until around the end of 1990, the relationship between the two items was such that the nominal amount of physical goods transactions peaked two to six quarters after the peaking of the nominal amount of asset transactions.

Figure 3 Nominal amount of asset transactions changing earlier than nominal amount of physical goods transactions



Source: Cabinet Office, Japan Securities Dealers Association, Tokyo Stock Exchange, Japan Real Estate Institute, etc.

The fact that the money stock (M2) was mostly comprised of loans until around 2000 and the fact that there was a time lag of up to one and a half years between the peaks of the nominal amounts of asset transactions and physical goods transactions provide an answer to the abovementioned question of why in the past, it took as long as one to

two years from an increase in the money stock (M2) before prices started to rise. The answer is because many loans were used for speculative asset transactions, such as stock land transactions. In other words, prices did not rise sharply because of a significant increase in the money stock (M2). Rather, there was a time lag because loans were used mainly for asset transactions before being used for physical goods transactions. Since 2000, the time lag has disappeared because the practice of using loans for speculative asset transactions has been almost abolished based on the lesson of the bubble economy.

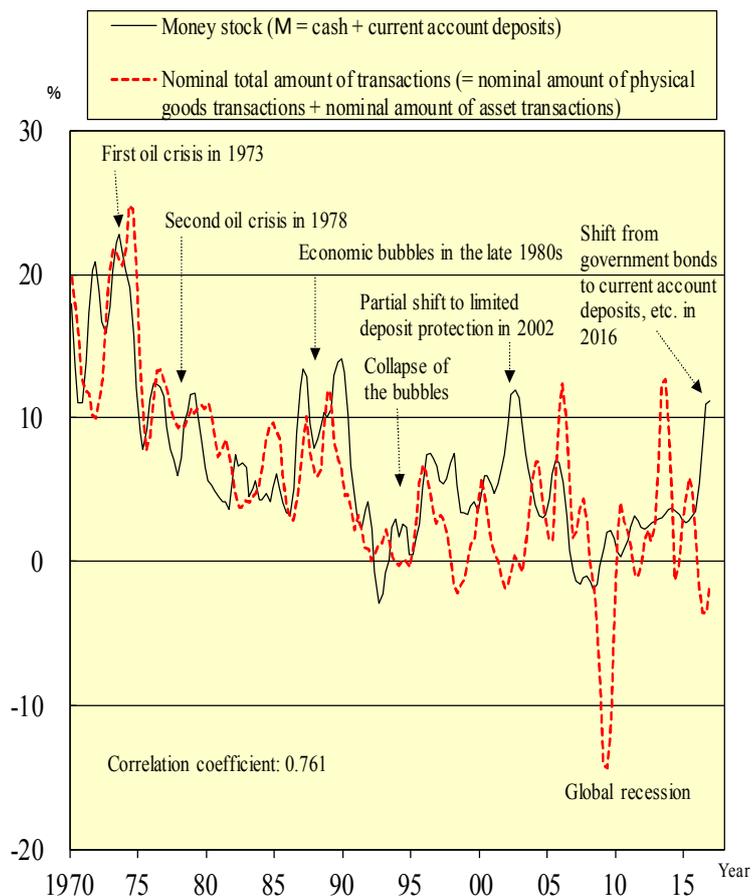
### Right Comparison between Money and Transactions

Let us define the total amount of cash and current account deposits as the “money stock (M)” in the sense of real money stock and compare it with the total amount of physical goods and asset transactions. The comparison shows that both items change at similar timings (both are expressed in terms of year-on-year change).

Figure 4, which shows the comparison, indicates that when the money stock (M) increases (decreases), the nominal total amount of transactions increases (decreases) in many cases.

Sometimes, there are differences between the movements of the two items for reasons such as (1) the estimation is based on a bold assumption in the absence of published data concerning land transactions, (2) stock transactions are no longer conducted through cash or current account deposits due to the spread of electronic trade, (3) in the case of current account deposits, only end-of-month data, which tend to fluctuate wildly, were available

Figure 4 Right comparison between money and transactions (comparison between the money stock (M) and nominal total amount of transactions) (year-on-year change)



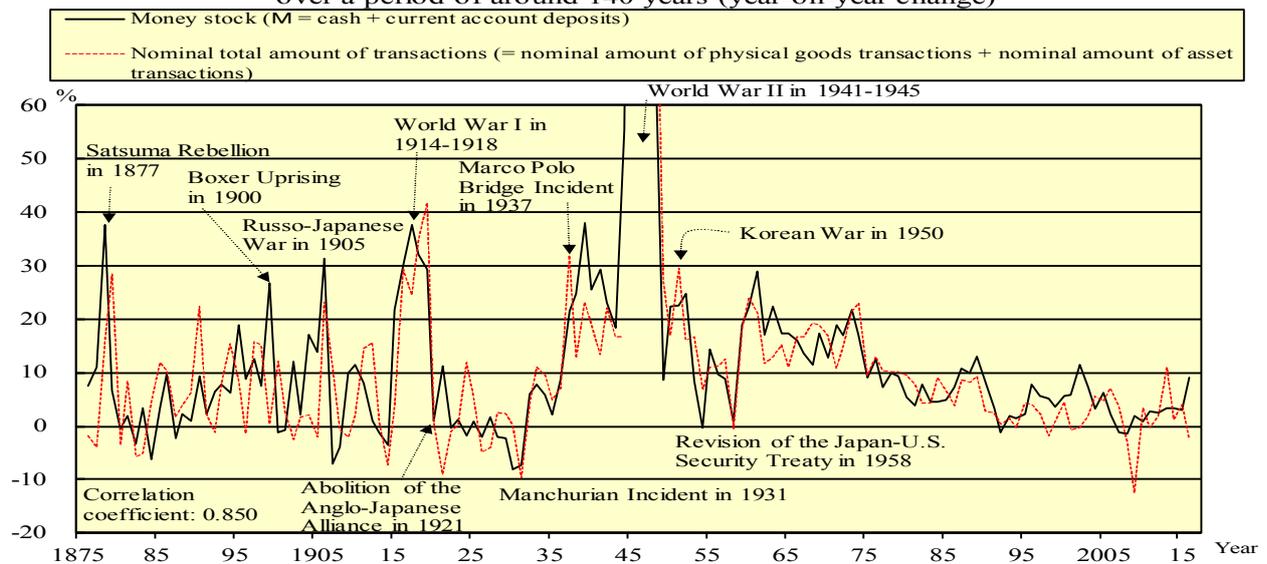
Source: Cabinet Office, Ministry of Finance, Bank of Japan, Japan Securities Dealers Association, Tokyo Stock Exchange, Japan Real Estate Institute, etc.

for the period until 1999, and (4) the cash amount may be affected by factors not related to transaction motives (for example, when full deposit protection was replaced by limited protection in 2002, there was a temporary flight of funds from deposits to cash. In 2016, a shift from investment in Japanese government bonds to cash and deposits accelerated in response to a decline in government bond yields. Phenomena like these occur because, as Keynes argued, money stock is used on the basis not only of transaction motives but also of precautionary or speculative motives).

Figure 5 shows the relationship between the money stock (M) and the nominal total amount of transactions over a period of around 140 years. Figures 4 and 5 are different in that the former shows quarterly changes and the latter shows annual changes, but both indicate that the Japanese economy has been changing as predicted by the “quantity theory of money” in the correct sense of the term. It was a time-consuming, painstaking process to prepare this figure. Presumably, this is the first time for the relationship to be expressed in a figure. Although recent data can be obtained through websites, preparing data for periods several decades ago in this way was a very cumbersome process.

The most important point suggested by these two figures is that changes in the money stock are not a cause but a result. It is not that prices rise when the money stock is increased but that the money stock increases because there are needs to use it for the settlement of transactions.

Figure 5 Relationship between the money stock (M) and the nominal total amount of transactions over a period of around 140 years (year-on-year change)

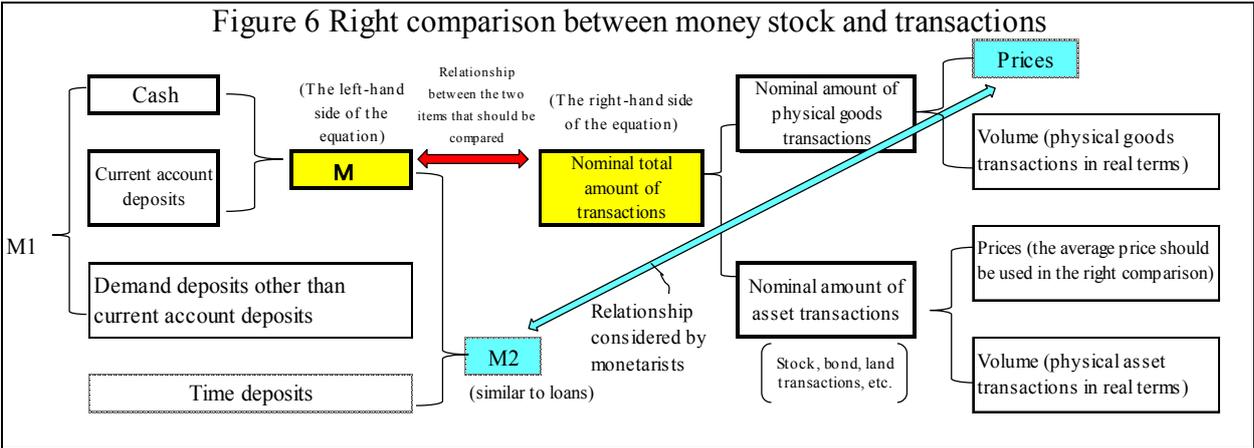


Note: The nominal total amount of transactions includes stock transactions for the period from 1896, imports for the period from 1930, and bond and land transactions for the period from 1955. However, data on the nominal total amount of transactions are not available for 1945 and 1946 due to the aftermath of the war.

Source: Major Japanese statistics since the Meiji period, including: System of National Accounts on annual and preliminary bases; economic statistics compiled by the Bank of Japan on annual and monthly bases; Financial Statements Statistics of Corporations by Industry; data available on the website of the Japan Securities Dealers Association; the urban land price index, Japan Real Estate Institute; *Nihon Kinyu no Suryo Bunseki* (Quantitative Analysis of Finance in Japan), Shozaburo Fujino and Jyuro Teranishi, etc.

Many of the points mentioned in the above analysis are based on the results of joint research conducted upon a proposal from Mr. Takao Akabane, who served as counsellor at the price bureau of the former Economic Planning Agency (which is now the Cabinet Office) before becoming the agency’s director-general and who is now a professor at Keio University’s Faculty of Economics. It should be noted that this analysis would have been impossible without Mr. Akabane’s commitment to accurately and thoroughly identifying the facts.

Figure 6 shows a summary of what has been explained so far in this report. The equation “Money stock (M) x currency turnover rate (V) = price (P) x transaction volume (T) (which is equivalent to the nominal total amount of transactions (PT),” which is based on the quantity theory of money, is correct. However, it is a prerequisite that the money stock (M) represents the total sum of cash and current account deposits. The nominal total amount of transactions must be equal to the sum of the nominal amount of physical goods transactions and the nominal amount of asset transactions. But monetarists and others sympathetic with their view were looking at M2, which includes ordinary and time deposits, which are seldom used for settlement purposes, and compared it with prices, which represent only a part of the nominal total amount of transactions (PT). As a result, they erroneously assumed that prices rose because of an increase in the money stock (M2) whereas in reality, the price rise resulted from growth in loans, and came to the wrong conclusion that prices can be raised if only the money stock (M2) is increased.



**Four Major Risks Involved in the Unconventional Monetary Easing**

The unconventional monetary easing involves the following four major risks.

The first risk is the possibility of an interest rate rise having adverse effects on the BOJ’s assets. In the past, when the annual inflation rate was 2%, the yield on 10-year

government bonds (long-term government bonds) was 4% on average. If the inflation rises at a rate of 2%, the yield rises by around four percentage points. The outstanding balance of long-term government bonds held by the BOJ was 385 trillion yen as of the end of April 2017. This means that if inflation rises at a rate of 2%, valuation losses of approximately 15 trillion yen ( $\approx \text{¥}385 \text{ trillion} \times \text{approx. } 4\%$ ) are estimated to arise on the BOJ's holdings of government bonds in the first year alone. The value of the BOJ's capital account, including reserves, is ¥7.6 trillion, a figure far too small to cover these losses.

The second risk is that if the BOJ is to have its risks covered by another entity, that entity must bear the risks. At the moment, financial institutions are parking funds received in exchange for selling government bonds to the BOJ as current account deposits at the BOJ and are earning annual interest of 0.1% on most of the deposits. If its income-expenditure balance deteriorates, the BOJ is expected to lower the current account deposit rate from 0.1%. If such a rate reduction is insufficient, the BOJ will have no option but to turn to the government for support. However, as is widely known, the government's finance is saddled with debts whose size is double the value of GDP.

The third risk is that an interest rate decline could reduce financial institutions' income, thereby making the financial system more vulnerable. That may be tolerable if the current policy is the right one based on a correct theory. However, it would be intolerable if the financial system became more vulnerable because of a wrong policy based on an incorrect theory.

The fourth risk is the impact that the monetary easing may have on borrowers in and outside Japan. Reliance on excessive monetary easing saps the strength of financial institutions just as drug addiction weakens humans physically and mentally. Although many companies have shed excessive reliance on easy money, unfortunately, an increasing number of companies will be unable to survive unless the present situation of excessive monetary easing continues. There is also a risk that excessive capital gains for which there is no effective means of usage could cause significant economic volatility in and outside Japan.

\*For further details, please see Kyoto Bank Economy Watching (April 17, 2016 "3. The Reason Why Money Supply Growth Does Not Push Up Prices")

URL: <https://www.kyotobank.co.jp/houjin/report/pdf/topics201704.pdf>

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