



Lisbon School
of Economics
& Management
Universidade de Lisboa

MASTER
INTERNATIONAL ECONOMICS AND EUROPEAN STUDIES

MASTER'S FINAL WORK
DISSERTATION

**INTERNATIONAL ADJUSTMENT IN CREDIT-BASED MONETARY
SYSTEMS: BEYOND HUME'S PRICE-SPECIE FLOW MECHANISM**

MARIANA RAMOS LOUREIRO

MAY 2026



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SUPERVISION:

PEDRO ALEXANDRE REIS CARVALHO LEÃO

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Para ser grande, sê inteiro: nada

Teu exagera ou exclui.

Sê todo em cada coisa. Põe quanto és

No mínimo que fazes.

Assim em cada lago a lua toda

Brilha, porque alta vive.

Fernando Pessoa

ABSTRACT, KEYWORDS AND JEL CODES

This paper revisits Hume's (1752) price-specie flow mechanism in the context of contemporary monetary systems. Under the gold standard, international payments were settled through transfers of gold, implying a direct link between trade imbalances and money supply, with trade deficits leading to monetary contraction and trade surpluses to monetary expansion. However, contemporary monetary systems, which are based on bank-created credit rather than on commodity money and where trade imbalances can be financed through international loans and banks can provide time deposits, differ from this institutional environment.

Using a theoretical framework grounded in post-Keynesian economics, this paper examines the monetary consequences of trade deficits and surpluses under contemporary economic systems. The analysis shows that external trade imbalances do not generate corresponding changes in the monetary aggregate M1. Instead, adjustment occurs primarily through variations in external debt, financial portfolios and exchange rates.

KEYWORDS: Endogenous Money, Post-Keynesian Economics, Price-Specie Flow Mechanism, Trade Imbalances, Money Supply

JEL CODES: E51, E52, E58, F31, F32, F41

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INTERNATIONAL ADJUSTMENT IN CREDIT-BASED MONETARY SYSTEMS: BEYOND HUME'S PRICE-SPECIE FLOW MECHANISM

By Mariana Ramos Loureiro

THIS PAPER EXAMINES THE MONETARY CONSEQUENCES OF TRADE DEFICITS AND SURPLUSES UNDER CONTEMPORARY ECONOMIC SYSTEMS. THE ANALYSIS SHOWS THAT EXTERNAL IMBALANCES DO NOT GENERATE CORRESPONDING CHANGES IN THE MONETARY AGGREGATE M1. INSTEAD, ADJUSTMENT OCCURS PRIMARILY THROUGH VARIATIONS IN EXTERNAL DEBT, FINANCIAL PORTFOLIOS AND EXCHANGE RATES.

1. INTRODUCTION

The adjustment of international trade imbalances has long occupied a central place in macroeconomic theory. One of the earliest and most influential explanations of this process is provided by Hume's (1752) price-specie flow mechanism, which suggests that such imbalances automatically adjust via changes in the domestic money supply: deficits reduce the money supply, lowering nominal wages and prices and restoring competitiveness, while surpluses expand money and increase nominal wages and prices. These changes ultimately restore external balance.

However, contemporary monetary systems differ fundamentally from the institutional environment in which Hume developed his argument. Modern economies are characterised by bank-created money, not commodity money as gold (Kaldor & Trevithick, 1981; Arestis & Eichner, 1988; Moore, 1988), international loans and banks providing time deposits. These three features raise an important question: do trade imbalances still generate the monetary adjustments described by Hume?

This paper argues that once these three features are considered, the monetary consequences of trade imbalances differ substantially from those predicted by Hume. In particular, trade deficits and surpluses do not lead to corresponding changes in the monetary aggregate M1. Instead, they lead to variations in external debt and financial portfolios. This has a crucial consequence: nominal wages and prices do not change and does not exist a mechanism restoring the external balance.

The analysis developed in this paper builds on the post-Keynesian theory of endogenous money¹, which emphasises the role of bank credit in the creation of money (Moore, 1988; Lavoie, 2022). While this literature has extensively examined the domestic implications of credit creation, less attention has been paid to the implications for Hume's price-specie flow mechanism. By taking into account the creation of money via bank credit, international loans and exchange-rate regimes, this paper shows that that mechanism does not operate in modern economies.

The remainder of the paper proceeds as follows. Section 2 reviews Hume's price-specie flow mechanism and compares Hume's and modern institutions. Section 3 analyses the effects of trade deficits on monetary variables under different exchange-rate regimes and theories of money creation. Section 4 examines the monetary implications of trade surpluses. Section 5 considers the adjustment mechanisms operating within a monetary union. Section 6 discusses the implications for international macroeconomic theory. Section 7 concludes.

¹ This theory was developed within post-Keynesian economics through contributions such as those of Kaldor (1970), Kahn (1972), Kaldor and Trevithick (1981), Moore (1988), Le Bourva (1992), and Lavoie (1984). More recently this view has also been increasingly recognized by researchers within Central Banks. The works of McLeay et al. (2014), the Banque de France (2016), and the Deutsche Bundesbank (2017), among others, illustrate this development.

2. HUME'S (1752) PRICE-SPECIE FLOW MECHANISM

According to Hume (1752), trade imbalances automatically generate gold flows between countries (figure 1). When a country runs a trade deficit, it must transfer gold abroad to pay for imports. The resulting reduction in gold reserves leads to a contraction of the domestic money supply by an amount corresponding to the trade deficit. Conversely, a trade surplus leads to an inflow of gold and an expansion of the money supply by an equivalent amount corresponding to the trade surplus.

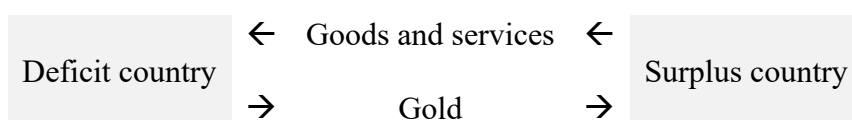


FIGURE 1 – Effects of trade imbalances according to Hume's (1752) price-specie flow mechanism

These monetary changes affect domestic price levels. In deficit countries, the contraction of the money supply reduces the prices of labour and commodities, which increase competitiveness, stimulating exports and reducing imports. In surplus countries the opposite occurs: the expansion of the money supply raises prices, reducing competitiveness. Through these adjustments, trade flows gradually reverse the initial imbalance and restore equilibrium. Hume (1752, p. 312) compared this process to the levelling of water, arguing that money, meaning gold and silver, tends to remain “nearly proportionable to the art and industry of each nation”, whenever there is free and mutually voluntary trade.

Mundell (1961) details Hume's argument: in the deficit country, the decrease of the money supply raises interest rates and thus induces a fall in aggregate demand and in nominal wages and prices. As a result, competitiveness improves and equilibrium is restored. Note however that another channel – a Keynesian one – may also operate. The decline in aggregate demand can lead to a reduction in output/income, and this lowers imports and eliminates the deficit.

However, the applicability of Hume's mechanism to modern economies is limited by three institutional differences. First, contemporary monetary systems are based on bank-created credit rather than on commodity money (Kaldor & Trevithick, 1981; Arestis & Eichner, 1988; Moore, 1988). Secondly, trade imbalances can be financed through international loans, and not only through gold or foreign currency already held in the country. Finally, banks can provide time deposits. As a result, the link between international payments and the domestic money supply is different from that than under the gold standard.

3. EFFECTS OF TRADE DEFICITS ON VARIOUS MONETARY VARIABLES

We now analyse the effects of trade deficits on monetary variables in different exchange-rate regimes and theoretical approaches to money creation.

3.1. Initial effects of trade deficits

Consider a country with a trade deficit where total expenditure exceeds domestic output/income. In order to finance the difference, households, businesses and state (henceforth, referred to as 'economic agents') have two possibilities: they may borrow from commercial banks, thereby increasing their indebtedness, or draw on previously accumulated savings held in time deposits, thus reducing them (figure 2). In both cases, a demand deposit will be created, implying an initial increase in the stock of M1. This does not happen in Hume's reasoning.

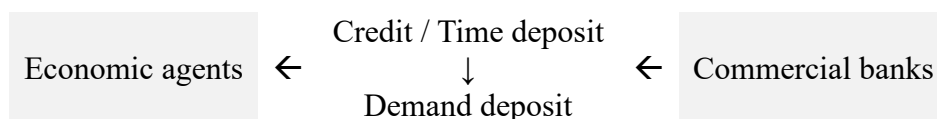


FIGURE 2 – Initial increase in the monetary aggregate M1 caused by trade deficits

Economic agents now need to exchange domestic currency for foreign currency to pay for imported goods and services. If commercial banks own foreign currency, they will supply the required foreign currency to those economic agents in exchange for their domestic currency, thereby extinguishing the demand deposits previously created (figure 3). As result, the monetary aggregate M1 decreases by the same amount by which it initially increased, so that the net variation of M1 in the deficit country is zero. This contrasts with Hume's conclusion that the stock of M1 declines in the deficit country. The reason is that Hume assumes that economic agents finance external deficits exclusively by using the existing stock of gold and therefore does not consider the initial expansion of the money supply that takes place in modern banking systems based on bank-created credit.

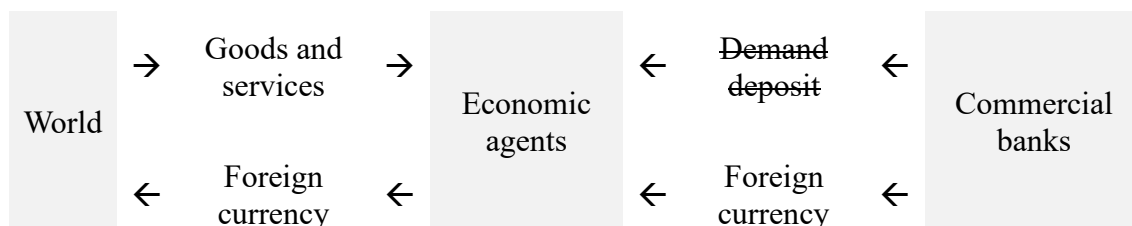


FIGURE 3 – Subsequent decrease in the monetary aggregate M1 caused by trade deficits

The implications of the trade deficit on the financial position of economic agents will depend upon the source of financing. If economic agents used time deposits to create the initial demand deposit, their time deposits will decrease by the size of the deficit. If instead economic agents resorted to credit, the amount of their debts will increase by the size of the deficit.

3.2. Subsequent effects of trade deficits

The subsequent effects will depend on how banks acquire foreign currency to supply to domestic economic agents. In particular, they will depend on whether banks have access to foreign currency loans or not.

3.2.1. If banks have access to foreign currency loans from foreign banks

If banks have access to loans from foreign banks, the external debt denominated in foreign currency increases by the amount of the trade deficit, while foreign reserves held by banks remain unchanged and exchange rates remain constant (figure 4). Moreover, the stock of M1 will not be affected. This happens in both fixed and flexible exchange rates. Both conclusions differ from those of Hume who, as seen, does not consider that a deficit can be financed through international loans.



FIGURE 4 – Subsequent effects of trade deficits if banks have access to foreign currency loans from foreign banks

3.2.2. *If banks do not have access to foreign currency loans from foreign banks*

In this case, commercial banks will try to obtain foreign currency by offering their domestic currency.

a) An economy under flexible exchange rates

Under flexible exchange rates, the Central Bank is not available to provide the foreign currency demanded by commercial banks. As a result, there is a depreciation of the domestic currency and an appreciation of the foreign currency (figure 5). The net change in the stock of M1 and in Central Bank foreign exchange reserves remains equal to zero.

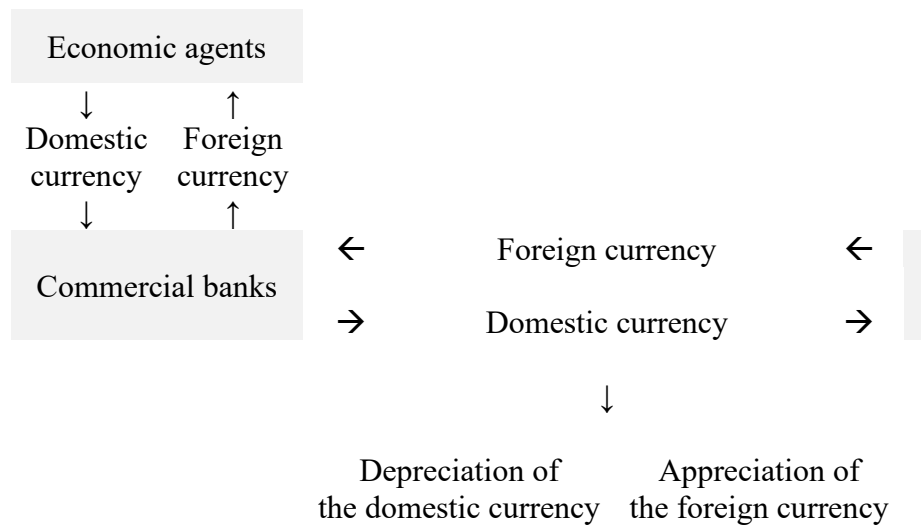


FIGURE 5 – Subsequent effects of trade deficits on economies under flexible exchange rates

b) An economy under fixed exchange rates

Under fixed exchange rates, in order to preserve the exchange rate, the Central Bank needs to provide the foreign currency demanded by commercial banks. This will cause a decline in the foreign exchange reserves of the Central Bank by the amount of the trade deficit. This aligns with Hume's conclusion.

In exchange for foreign reserves, the Central Bank absorbs domestic currency from commercial banks. This leads to a reduction in the reserves of commercial banks. But, as previously shown, the net variation of demand deposits remains zero. Consequently, the ratio of banks' reserves to demand deposits falls and becomes lower than the minimum legally required (figure 6).

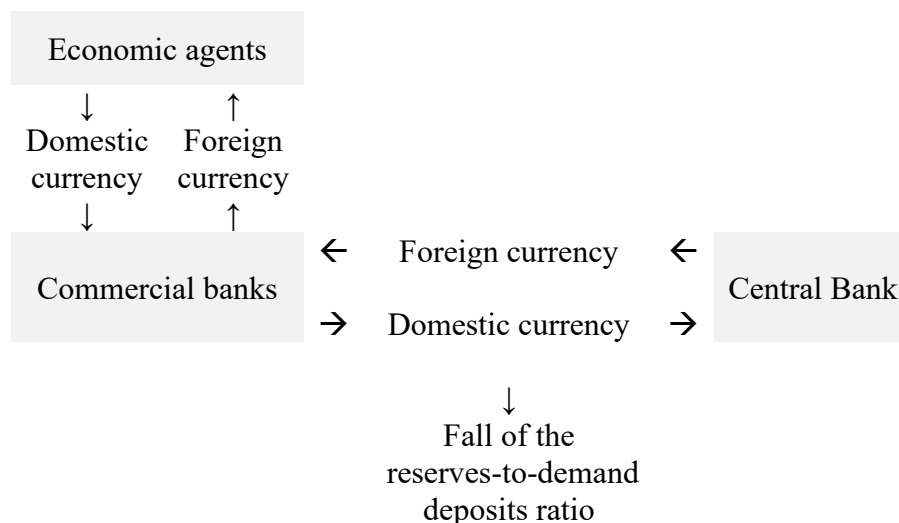


FIGURE 6 – Subsequent effects of trade deficits on economies under fixed exchange rates

How will banks increase this ratio back to the legal minimum? The answer depends on whether we adopt the endogenous or the exogenous approach to money creation.

i) Endogenous money approach²

In this case, to restore the reserves-to-demand deposits ratio, banks can borrow from the Central Bank the amount of reserves that is required at a previously defined interest rate (McLeay et al., 2014). Therefore, they do not need to make any adjustment in their demand deposits. Hence, in a country with a trade deficit the stock of M1 does not fall, in contrast with what happens with Hume.

However, when considering the variation in foreign reserves, the conclusions converge with those of Hume. Foreign reserves decline in this case because of the trade deficit and by its amount. As Lavoie (2001, 2022) points out, in the long run an economy with a deficit under fixed exchange rates will eventually run out of reserves, leading to

² In this view, money is created when economic agents decide to ask for loans from banks (Banque de France, 2016). The specific quantity of money created is determined by the amount of credit that they decide to demand, given the prevailing interest rates, and by the share of that credit which banks decide to grant (Moore, 1988; Le Bourva, 1992). Money creation is endogenous (Kaldor, 1970) and demand-led (Arestis & Eichner, 1988; Moore, 1988; Lavoie, 2022), with reserves being supplied by the Central Bank to commercial banks according to their demand, in exchange for other assets on their balance sheets (McLeay et al., 2014).

the need to devalue the currency, control imports, impose monetary or fiscal austerity policies, or borrow reserves.

ii) Exogenous money approach

According to the exogenous money approach, the Central Bank takes the initiative to create and determine a specific quantity of money for the economy through reserve lending to banks (Mankiw, 2022). The Central Bank will not lend reserves to commercial banks at their will. Therefore, to restore the reserves-to-demand deposits ratio, banks will increase their demand for reserves in the interbank money market. As a result, the interest rate in this market increases.

In turn, this will lead to an increase in the interest rate on credit. Consequently, credit and therefore deposits will decrease. The process continues until the reserves-to-demand deposits ratio is restored. The upshot is a decline in demand deposits and in the stock of M1 that is larger than the trade deficit – a different result than Hume's.

Finally, note that there is a different possible outcome. This occurs if the Central Bank, in order to prevent the trade deficit from forcing banks to reduce credit, takes the initiative to provide reserves to commercial banks. To do so, it can conduct open market operations, purchasing Treasury bills from banks in exchange for reserves.

In this case, the net variation of M1 is zero. Note that the consequences are similar to those obtained under the endogenous money approach. However, whereas under the endogenous view the provision of reserves by the Central Bank occurs automatically (Craig & Humpage, 2001), under the exogenous view it must result from an explicit initiative by the Central Bank.

TABLE I - EFFECTS OF TRADE DEFICITS ON VARIOUS MONETARY VARIABLES

			Monetary aggregate M1	Monetary aggregate M2	External debt	Exchange rate	Foreign reserves
Hume's (1752) price-specie flow mechanism			Decrease by the amount of the trade deficit	Decrease by the amount of the trade deficit	No variation	No variation	Decrease by the amount of the trade deficit
Banks with access to foreign currency loans from foreign banks (fixed or flexible exchange rates)			No variation	Decrease by the amount of the trade deficit or remain unchanged	Increase by the amount of the trade deficit	No variation	No variation
Banks without access to foreign currency loans from foreign banks	Flexible exchange rates		No variation	Decrease by the amount of the trade deficit or remain unchanged	No variation	Depreciation of the domestic currency	No variation
	Fixed exchange rates	Endogenous money approach	No variation	Decrease by the amount of the trade deficit or remain unchanged	No variation	No variation	Decrease by the amount of the trade deficit
		Exogenous money approach	Decrease by an amount larger than the trade deficit	Decrease by the amount of the trade deficit or	No variation	No variation	Decrease by the amount of the trade deficit

				remain unchanged			
		Exogenous money approach with sterilization	No variation	Decrease by the amount of the trade deficit or remain unchanged	No variation	No variation	Decrease by the amount of the trade deficit

4. EFFECTS OF TRADE SURPLUSES ON VARIOUS MONETARY VARIABLES

We now examine the implications of trade surpluses on monetary variables.

4.1. Initial effects of trade surpluses

As payment for their goods and services, exporters receive a cheque denominated in foreign currency. They then deliver the cheque to their commercial banks in exchange for demand deposits denominated in the domestic currency (figure 7). As a result, the monetary aggregate M1 increases in the surplus country. This shows that in an open economy money can be created not only through the creation of new credit but also as a result of the supply of foreign currency by exporters (Deutsche Bundesbank, 2017).

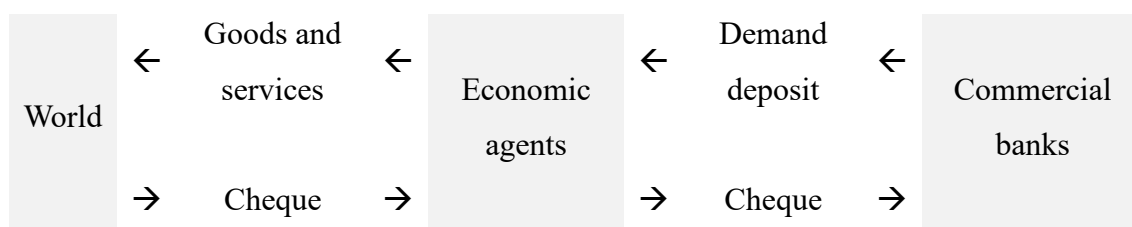


FIGURE 7 – Initial increase in the monetary aggregate M1 caused by trade surpluses

4.1.1. Lavoie's (2022) argument

Nevertheless, Lavoie (2022) argues that the rise in the stock of M1 is followed by a decline – so that the variation in M1 at the end of the process will be zero – differing from Hume's conclusion. According to Lavoie (2022, p.515)³, this is because:

Exporters, who now get paid for their exports, previously incurred expenditures when producing these export goods, and probably had to borrow to do so. As a result, when they transform their foreign receipts into domestic deposits, these deposits are utilized to pay back their debt *vis-à-vis* the banks.

Lavoie's argument is based on the monetary circuit approach. According to this, companies need to pay wages, capital costs, and raw materials before receiving any revenue from sales. Therefore, they must obtain loans from commercial banks before

³ This argument draws on the studies of Kaldor and Trevithick (1981) and of Robinson (1956) and was also advanced by Lavoie (2001).

production starts. Then, when firms eventually sell their production, they will use their revenue to repay their loans (figure 8). This means that money increases when production starts and loans are obtained and then falls back to its initial level when revenues are obtained and loans are repaid⁴.

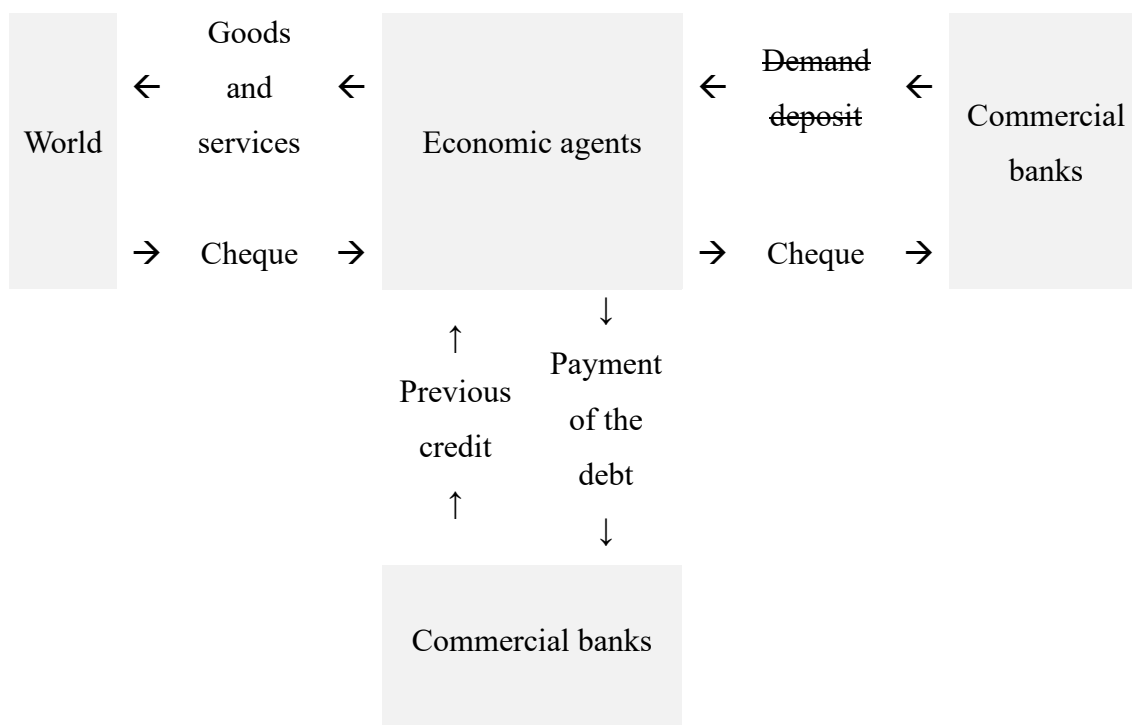


FIGURE 8 – Subsequent decrease in the monetary aggregate M1 caused by trade surpluses, according to Lavoie's (2022) argument

Although we will argue that the monetary aggregate M1 does not change in the surplus country – also diverging from Hume on this point – we do not attribute this to the repayment of previously contracted bank credit. Besides, we argue that the process may have implications for the broader monetary aggregate M2, which is not considered in Lavoie's analysis.

⁴ A similar argument has been put forward by Le Bourva (1992) and Arestis and Eichner (1988).

4.1.2. Critique to Lavoie's (2022) argument

In order to set our argument, we shall first consider the monetary circuit approach in the context of an economy that produces only for the domestic market. According to this, firms request loans from banks, which they use to pay for productive factors. For analytical simplicity, we consider only labor. Workers then use their wages to purchase consumption goods from firms, who, in turn, use the revenues they receive to pay profits. Those are then used by the owners of the firms to purchase investment goods from firms (under the assumption that those owners use all their profits to invest). Finally, firms use this amount to repay the loans to commercial banks. Therefore, the stock of M1 at the end of the cycle is the same as at the beginning.

Consider now an economy that also produces for export (and, for simplicity, does not import). The process described above will be the same, ending with firms repaying the loan to commercial banks. However, firms additionally receive money from the rest of the world as payment for the goods they export. Given no imports, exports reflect the difference between output/income and expenditure on consumption and investment goods. It must therefore correspond to net financial saving, which initially will take the form of demand deposits. However, in order to get some return, these will be applied in time deposits or Treasury or corporate bonds.

If the country's savers decide to transfer the profit to time deposits, the stock of M1 will decrease back to its initial level. Therefore, a surplus ends up having no effect on the stock of M1 – differently from what Hume argued. At the same time, it results in an increase in the stock of M2 (figure 9). This is not taken into account in Lavoie's analysis. Exporters increase their savings by the amount of the surplus, which is consistent with the fact that they produce more than they spend.

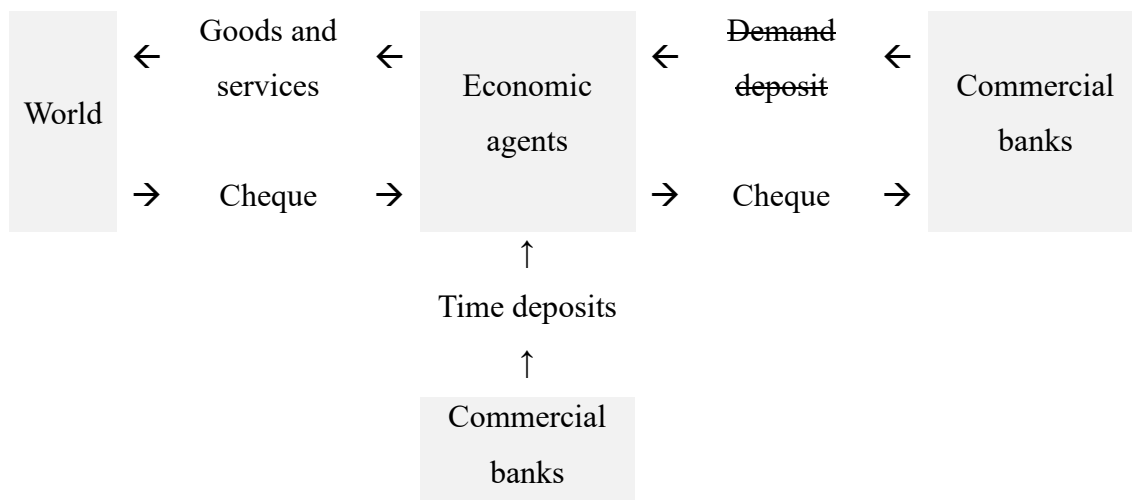


FIGURE 9 – Subsequent decrease in the monetary aggregate M1 caused by trade surpluses if exporters transfer the profit to time deposits

If, instead, the owners of firms opt to buy Treasury or corporate bonds, the demand deposit is merely transferred from the account of the bond purchaser to that of the seller, without influencing the stock of M1. But the seller may use the demand deposits to obtain time deposits, ultimately resulting in a decline of M1 back to its initial level and in an increase in the stock of M2 equal to the amount of the trade surplus (figure 10). Again, the conclusions differ from those of Hume.

However, additionally, it should be noted that an increased demand for bonds will increase their prices, causing a decline in their interest rates. In this situation, the decrease in bond interest rates leads to an increase in investment and, consequently, in aggregate demand. As a result, unemployment decreases and nominal wages rise, thereby increasing unit labor costs and prices. The consequent decline in competitiveness supports Hume's argument that prices will rise and the surplus will eventually be reduced to zero in the surplus country.

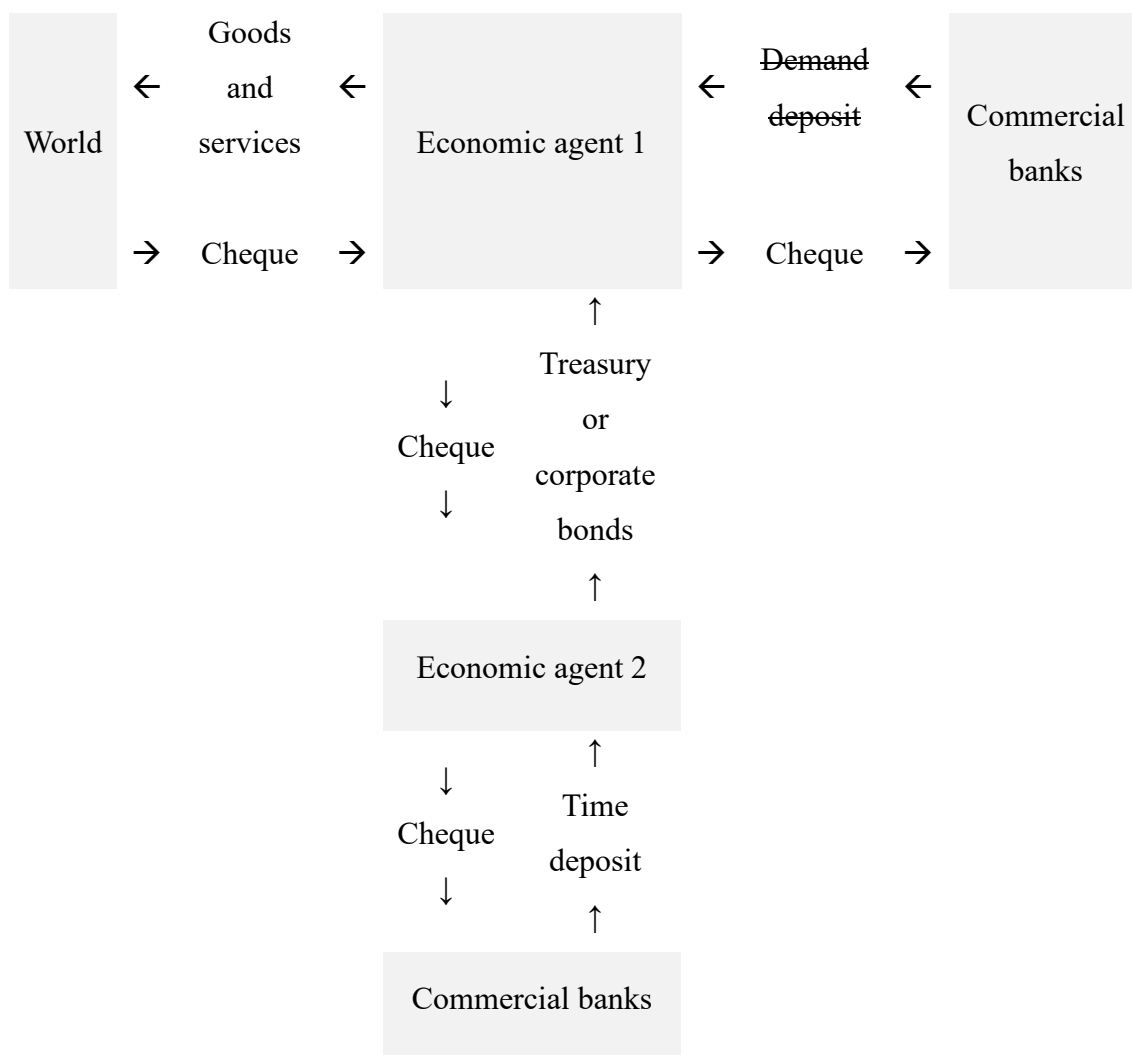


FIGURE 10 – Subsequent decrease in the monetary aggregate M1 caused by trade surpluses if exporters buy Treasury or corporate bonds

4.2. Subsequent effects of trade surpluses

In order for commercial banks of the surplus country to open new demand deposits, in exchange for the cheques provided by economic agents, they must convert foreign currency into domestic currency. Once again, the outcome of this situation will depend on the exchange-rate regime adopted by the country.

a) An economy under flexible exchange rates

In the case where the surplus country operates under flexible exchange rates, the Central Bank does not intervene to provide the domestic currency that commercial banks demand. This leads to an appreciation of the domestic currency (figure 11). In this

situation, no further changes in M1 and in M2 occur. Therefore, the surplus ends up having no effect on the stock of M1 – a conclusion that diverges from Hume's – and increasing the stock of M2.

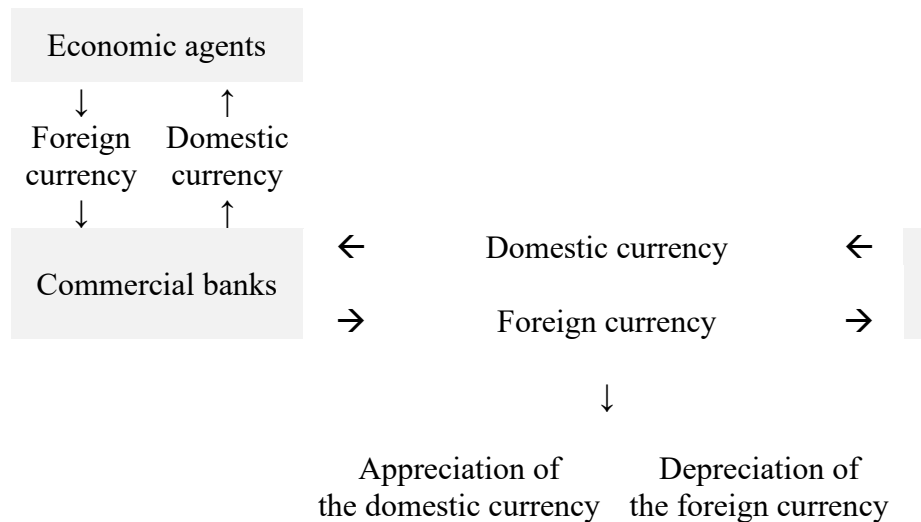


FIGURE 11 – Subsequent effects of trade surpluses on economies under flexible exchanges

b) An economy under fixed exchange rates

Under fixed exchange rates, the Central Bank provides commercial banks with the demanded domestic currency in exchange for foreign currency. This will increase foreign reserves by the amount of the trade surplus, as Hume predicted, while, simultaneously, the ratio of banks' reserves to demand deposits will increase – and become higher than the minimum legally required, with commercial banks holding excess reserves (figure 12). Whether this ratio will be restored through adjustments in reserves or in deposits depends on the perspective on money creation that is adopted.

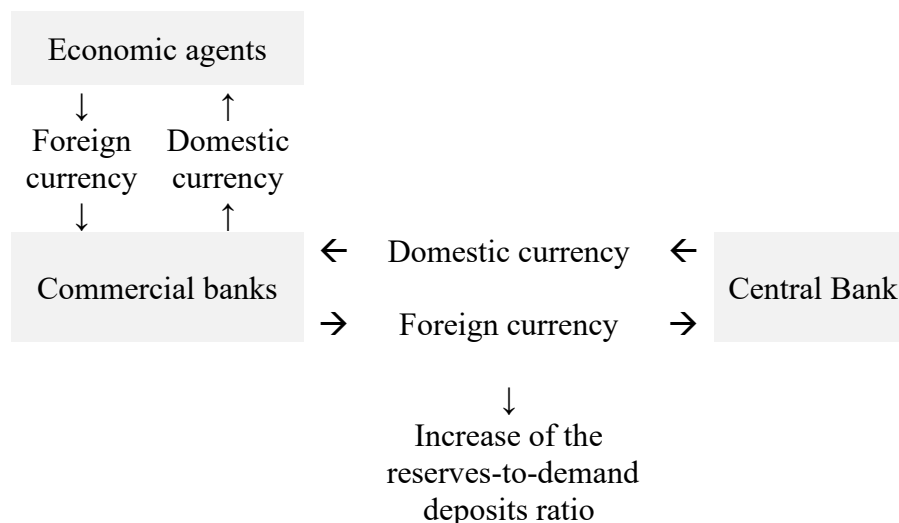


FIGURE 12 – Subsequent effects of trade surpluses on economies under fixed exchange rates

i) Endogenous money approach

As previously noted, the endogenous money approach holds that the Central Bank will be available to absorb the excess reserves held by commercial banks, in order to keep its interest rate at the intended level (Craig & Humpage, 2001). The country's foreign reserves may be offset in three different ways: by a decrease in the indebtedness of the commercial banking sector vis-à-vis the Central Bank – the case of the Bundesbank in 1992-93, according to Lavoie (2022) –, by a reduction in other Central Bank assets or by an increase in its liabilities. Sales of Central Bank bills, as Lavoie and Wang (2012) and Li et al. (2021) show to have been the case of the Chinese Central Bank in recent decades, or a transfer of government deposits from banks to Central Bank, as occurred in Canada in 1995-96⁵ (Lavoie, 2001, 2022), would have the same effect⁶.

⁵ In this case, the appropriate amount of deposits to be transferred must be carefully calculated in order to allow the ratio to be restored, since this operation also implies a decrease in deposits held by commercial banks.

⁶ Econometric evidence of the application of this process in other contexts has also been provided by Marselli (1993) and by Angrick (2018).

Note that, in this case, the ratio is restored through a decrease in the reserves of commercial banks, with the net variation of M1 being zero, contrary to what Hume argued, and the stock of M2 increasing.

ii) Exogenous money approach

According to the exogenous money approach, the Central Bank will not be available to absorb the excess liquidity, and therefore commercial banks will instead resort to the interbank money market. As a result, the supply of reserves in this market increases, which creates a tendency for the interest rate in the market to decrease. In turn, this leads to a decrease in the interest rate of credit and thus to an increase in credit. This has effects at two levels.

First, this implies an increase in demand deposits. These will increase until the legally required reserves-to-demand deposits ratio is met, and thus by an amount greater than the foreign currency obtained via the surplus of the country. The overall effect in this scenario is therefore an increase in M1 greater than the surplus itself. This also differs from Hume's claim.

Secondly, the rise in credit implies an increase in aggregate demand, which leads to an increase in GDP and a decrease in unemployment – which may fall below the natural rate of unemployment. If this happens, prices will rise, as nominal wages – and thus unit labor costs – increase in response to competition among firms for labor. The conclusion is the same as Hume's.

Be as it may, nothing explained in this section up until now will occur if the Central Bank takes the initiative to sterilize the excess reserves in order to avoid an increase in prices. In this scenario, the conclusion will coincide with that reached under the endogenous money approach. The net variation of M1 will be zero, foreign reserves will increase, and the stock of M2 will increase by the amount of the trade surplus. But note that in this case this will depend on the initiative taken by the Central Bank. By contrast, under the endogenous money approach it is an automatic process.

TABLE II - EFFECTS OF TRADE SURPLUSES ON VARIOUS MONETARY VARIABLES

		Monetary aggregate M1	Monetary aggregate M2	Exchange rate	Foreign reserves
Hume's (1752) price-specie flow mechanism		Increase by the amount of the trade surplus	Increase by the amount of the trade surplus	No variation	Increase by the amount of the trade surplus
Flexible exchange rates		No variation	Increase by the amount of the trade surplus	Appreciation of the domestic currency	No variation
Fixed exchange rates	Endogenous money approach	No variation	Increase by the amount of the trade surplus	No variation	Increase by the amount of the trade surplus
	Exogenous money approach	Increase by an amount larger than the trade surplus	Increase by the amount of the trade surplus	No variation	Increase by the amount of the trade surplus
	Exogenous money approach with sterilization	No variation	Increase by the amount of the trade surplus	No variation	Increase by the amount of the trade surplus

5. EFFECTS OF TRADE DEFICITS AND SURPLUSES WITHIN A MONETARY UNION ON VARIOUS MONETARY VARIABLES

We now consider the adjustment process in a monetary union. In such a system, where countries share a common currency, international payments between member countries do not involve foreign exchange transactions.

5.1. Initial effects of trade deficits and surpluses within a monetary union

Consider the case of a deficit country within the monetary union. In that country, economic agents – which spend more than their income – may request loans from their commercial banks, which then create demand deposits in their accounts. Another option is to convert time deposits into demand deposits. In both cases, the stock of M1 in the country will rise.

Now, the importers of that country pay for goods and services with a cheque, which exporters from the surplus country, in turn, deposit in their banks. When these banks, now in possession of the cheques, request from the banks of the deficit country the corresponding funds, these extinguish the demand deposits they created when they extended the loans. The process results in no net variation in the monetary aggregate M1 in the deficit country – a conclusion which differs from Hume's. Besides, the deficit leads to a decrease in the monetary aggregate M2 or – if the difference between expenditure and income was financed with credit – has no effect on that stock.

Consider now the initial effects of the trade surplus. When payments to exporters are settled through the banking system, demand deposits are created. It follows that, in the surplus country as well, there is an initial increase in the stock of M1 by an amount corresponding to the surplus. However, since expenditure in the country is lower than its output, economic agents will convert the new demand deposits into time deposits. In this way, the stock of M1 falls back to its initial level and ends up not increasing in the surplus country – contrary to what Hume claimed. Instead, the surplus leads to an increase in the monetary aggregate M2.

5.2. Subsequent effects of trade deficits and surpluses within a monetary union

In the deficit country, in order to provide importers with the loans required to finance their imports, commercial banks may borrow from banks located in the surplus country.

This means that commercial banks in the deficit country can obtain reserves from banks in the surplus country in order to repay them afterwards.

The debt of the importers of the deficit country vis-à-vis commercial banks increases by the amount of the deficit. In turn, their commercial banks increase their indebtedness vis-à-vis commercial banks in the surplus country by the same amount. This leaves the financial position of commercial banks in the deficit country unchanged, since their liabilities increase by the same amount as their assets. The same occurs for commercial banks in the surplus area, which, because of the conversion of demand deposits into time deposits, become indebted vis-à-vis exporters from the country, while simultaneously acquiring assets through lending reserves to banks in the deficit country. Ultimately, the debt contracted by the economic agents of the deficit country, who spend more than they produce, is owed to the economic agents of the surplus country, who spend less than they produce.

Once again, this outcome differs from Hume's conclusion. Instead of M1 flowing from the deficit country to the surplus country, there is an increase in the indebtedness of the deficit country vis-à-vis the surplus country.

6. IMPLICATIONS FOR INTERNATIONAL ADJUSTMENT MECHANISMS

This paper has broad implications for the understanding of international adjustment processes in contemporary monetary economies.

Under the gold standard, the adjustment of external imbalances relied on automatic changes in money supply which produced nominal wage and price adjustments that restored competitiveness and corrected trade imbalances. In contemporary economic systems, however, the adjustment of external imbalances occurs primarily through external debt, financial portfolios and exchange rates. A comparison of the two frameworks is shown in Table 3.

TABLE III - INTERNATIONAL ADJUSTMENT PROCESS IN HUME'S (1752) ARGUMENT AND
IN CONTEMPORARY MONETARY SYSTEMS

	Hume (1752)	Contemporary monetary systems
Payment medium	Gold flows	Bank deposits and financial transfers
Money	Commodity money	Bank-created money
Capital mobility	Not considered	Fundamental
Adjustment channel	Nominal wages, prices and competitiveness	External debt, financial portfolios and exchange rates

One consequence of this institutional transformation is that external trade imbalances can persist for extended periods of time. Because deficits can be financed through credit creation and international loans, they do not necessarily trigger the automatic contraction of money supply in the deficit country predicted by Hume's price-specie flow mechanism. Instead, deficit countries may accumulate external debt, or, if they do not have access to loans from foreign banks, face either a depreciation of the domestic currency or a decline in foreign reserves. By contrast, surplus countries may be associated with the accumulation of financial wealth rather than with persistent increases in the

domestic money supply. These dynamics help explain the persistence of global imbalances observed in the contemporary world economy.

7. CONCLUSION

This paper has revisited Hume's (1752) price-specie flow mechanism in the context of contemporary monetary systems. Hume's analysis, developed under the gold standard, assumes that international payments are settled through transfers of gold that directly affect money supply. In this framework, trade deficits lead to monetary contraction, while trade surpluses generate monetary expansion.

The analysis presented here shows, however, that the adjustment mechanisms operating in modern economies differ substantially from those described by Hume. Because money is primarily created through bank credit, international payments are mediated by financial institutions rather than by transfers of commodity money. Furthermore, deficits can be financed through international loans and banks can provide time deposits to economic agents with positive net financial savings. As a result, trade imbalances do not lead to corresponding changes in the monetary aggregate M1, as argued by Hume. Instead, they tend to be reflected in changes in external debt, financial portfolios and exchange rates.

These findings suggest that the price-specie flow mechanism provides little, if any, description of adjustment in contemporary monetary economies. This is corroborated by the persistent global imbalances observed in the world economy over the past decades. Understanding these imbalances requires a framework that explicitly incorporates the role of banks, credit creation, and international financial flows.

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