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The endogenous money and the sustainability of the dollar regime: A post-Keynesian analysis

El dinero endógeno y la sostenibilidad de la dolarización en el Ecuador: una visión postkeynesiana[1]

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ABSTRACT

This study analyzes the impact of domestic currency on the long-term viability of Ecuador's dollarization policy. The post-Keynesian approach is employed to examine the interaction between the real and monetary sectors. It has been posited that, despite the nation's loss of autonomy in issuing its own currency, the domestic financial system, particularly commercial banks, assumes a pivotal role in the creation of money through the facilitation of credit. The present research employs a qualitative approach, underpinned by theoretical and analytical frameworks, augmented by the application of descriptive statistics. The analysis utilizes data from the Central Bank of Ecuador, encompassing liquidity, GDP, and credit extended to the private sector. The findings indicate that endogenous money creation has contributed substantially to economic growth, even in the absence of monetary

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sovereignty. It has been determined that the Central Bank, even within a dollarized framework, possesses the capacity to employ instruments such as reserve requirements and the base interest rate, thereby exerting its influence on the broader economic landscape. Consequently, the efficacy of an active monetary policy in economies lacking their own currency is reinforced.

Keywords: Monetary endogeneity, circuits monetary, post-Keynesian theory, monetary policy.

JEL Codes: E00, E10, E12, E51.

RESUMEN

Este estudio examina la influencia del dinero endógeno sobre la sostenibilidad económica de del régimen de dolarización en Ecuador. Con base en el enfoque postkeynesiano, se examina la interacción entre el sector real y el monetario. Se sostiene que, aunque el país ha perdido la capacidad de emitir su propia moneda, el sistema financiero nacional, especialmente los bancos comerciales, cumple un papel central en la creación de dinero a través del otorgamiento de créditos. La presente investigación adopta un enfoque cualitativo con sustento teórico-analítico, complementado con el uso de estadística descriptiva, utilizando datos del Banco Central del Ecuador sobre liquidez, PIB y crédito al sector privado. Los resultados muestran que la creación endógena de dinero ha contribuido significativamente al crecimiento económico, incluso en ausencia de soberanía monetaria. Se concluye que el Banco Central, aun en un contexto dolarizado, puede aplicar herramientas como el encaje legal y la tasa de interés base para incidir sobre la economía. Así, se refuerza la viabilidad de una política monetaria activa en economías sin moneda propia.

Palabras clave: Endogeneidad monetaria, circuito monetario, teoría postkeynesiana, política monetaria.

Códigos JEL: E00, E10, E12, E51.

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INTRODUCTION

This paper is a theoretical endeavor that aims to elucidate the significance of endogenous money in the dollarization scheme of the Ecuadorian economy. The theory of endogenous money traces its origins to classical thought, a concept that was subsequently elaborated upon by prominent scholars such as Menger (1892), Keynes (1936), and subsequently further developed in subsequent works by Kaldor (1985), Moore (1988), Davidson (1994) and Lavoie (1982, 1984, 2002 and 2022). These scholars advanced the argument that the central bank does not directly determine the total amount of money in the economy; rather, it is also influenced by the commercial banking system. The concept posits that money is created internally through credits from households and firms. This dynamic has a substantial impact on economic stability.

It underscores the pivotal function of commercial banks in facilitating loans that result in the generation of new deposits, thereby augmenting the money supply. This approach diverges from the conventional understanding of exogenous money, which posits that the central bank exercises direct control over the money supply in the economy through the process of monetary issuance. A plethora of theories support the endogenous creation of money, including the theory of the monetary circuit and the post-Keynesian theory, which employs a structuralist and horizontalist approach as its primary tenets. These theories underscore the intricacies and ramifications of money on monetary policy.

The monetary circuit theory posits that the presence of money is contingent upon the debt that is incurred as a result of the demand for bank loans. These theories will serve as the foundation for our analysis of endogenous money in the Ecuadorian economy. The presence of money that is produced within the economy has been demonstrated to have a substantial effect on the money supply, interest rates, economic cycles, and price stability. Therefore, in order to develop effective monetary policies, it is essential to comprehend the proper functioning of the economic system.

In countries like Ecuador, which does not issue its own currency and has experienced a loss of autonomy in its monetary policy, the potential for endogenous money creation to

become a significant factor in the sustainability of dollarization is a matter of considerable interest. This development prompts the following inquiry: The central question guiding this study is whether Ecuador's dollarized economy, characterized by its reliance on external financial resources, has influenced the long-term economic sustainability of the nation.

Therefore, the objective of this paper is to analyze whether endogenous money creation is an important factor for the sustainability of dollarization in the Ecuadorian economy. In order to achieve this objective, the present paper will be divided into three sections. The first section will consist of the introduction. The second section will expose concepts and literature reviews to understand the economic theory regarding endogenous money, the dollarization process in Ecuador, and the importance of commercial banks. Finally, the conclusions will be presented in the third section.

THE CONCEPTION OF MONEY IN ECONOMICS

Discussion on the exogenous or endogenous nature of money

According to Llerena (2022), the various schools of economic thought throughout history have investigated the functioning of the economic system. Consequently, the role of money as an essential element of the price system is analyzed. The two predominant schools of economic thought in the contemporary era—neoclassical IS-LM and neo-Keynesian synthesis—are distinguished by their examination of a real exchange economy, a consequence of their neoclassical foundation. These schools are represented by the following sequence: The sequence of transactions is designated as "commodity-money-commodity" ($C - M - C'$).

In this analytical framework, the medium of exchange is conceptualized as a conduit for facilitating economic transactions involving the exchange of goods and services within the context of an economy[7]. In the context of households, the initiation of economic activity

[7] Se conoce que el dinero dentro de la sociedad en la realidad actúa como medio de cambio, medida de valor, medio para diferir pagos y depósitos de valor, sin embargo, la discusión se centra es que bajo la delimitación teórica del modelo cual es el principal rol del dinero en el sistema económico (Harrod, 1972).

occurs when households receive their disposable income (after taxes) from the sale of productive factors. This income is then allocated toward consumption (C) and savings. Savings are deposited in commercial banks, which then allocate them to finance the investments of firms (M). Consequently, this results in other households and firms being able to consume products of equal or greater value (C'). Consequently, the financial resources possessed by economic agents merely serve to facilitate exchange, thereby confining the role of currency to that of a medium of exchange (Llerena, 2022).

In contrast, a post-Keynesian, Marxist, and neo-Marxist perspective proposes a model representative of a monetary economy of production. In this conception, money is not neutral. The sequence proposed by this approach is as follows: the economic process can thus be represented by the following "money-commodity-money" $(M - C - M')$ model: (1) money (M) refers to the currency in the possession or custody of an individual or entity; (2) commodity consumption (C) denotes the utilization or expenditure of a commodity for the purpose of meeting needs or desires; (3) money plus profit or capital accumulation (M') signifies the increase or augmentation in the financial resources or assets of an entity resulting from the exchange, production, or investment activities undertaken for the purpose of profit generation. According to this theoretical framework, the initiation of economic activity is initiated by banking institutions when they establish monetary deposits in response to the demand for credit by enterprises seeking to invest in production (M). According to Llerena (2022), entrepreneurs request the production of the goods they require in the productive process (C), which results in a higher income for firms relative to their cost of production (M') (Llerena, 2022).

The final conception suggests that economic activities are carried out in a framework of

Adicionalmente, el dinero debe cumplir con algunas cualidades para usarse sin problemas: homogéneo, maleable, lo que significa que se pueda dividir con precisión, el dinero tiene que ser duradero por reserva de valor y por medio de pago, además de ser portable haciendo referencia a valor de unidad, peso, extensión y comodidad.

uncertainty about the future. This implies that economic agents have a preference for liquidity as a mechanism to reserve value. Consequently, the primary function of currency in this proposal is to serve as a store of value and subsequently as a medium of exchange. It is evident that the disparate conceptions of money are predicated on divergent responses to a fundamental inquiry: whether monetary variables exert influence on the real sector of the economy, both in the short term and in the long term. According to Llerena (2022), the monetary debate emerged in two distinct instances:

- The initial focus pertained to the distinction between exogenous and endogenous nature of money. The neoclassical synthesis posits that money is exogenous and that the classical dichotomy is fulfilled, at least in the long run. The post-Keynesian school of thought posits that the fundamental monetary policy instrument employed by the central bank is the regulation of the money supply within the economy. According to this perspective, money is considered endogenous and exerts influence on real variables in both the short and long term. Consequently, the primary monetary policy instrument utilized by the central bank is the determination of the interest rate (González Hernández, 2023).
- In a subsequent moment, the debate on the nature of money begins when Woodford (2003), a prominent figure in the neo-Keynesian paradigm, acknowledges the endogenous nature of money. The text goes on to argue that the endogenous nature of money is thus recognized, and that there is a point of convergence with the post-Keynesian view. However, although in neo-Keynesianism the primary monetary policy instrument is the real interest rate in accordance with the Taylor rule, this apparent convergence underscores the divergences in the underlying mechanisms of these two paradigms to explain the dynamics of the monetary and real sectors of the economy (Llerena, 2022).

This secondary moment in the monetary debate, during which the neo-Keynesian and post-Keynesian schools concur on the endogenous nature of money, signifies a novel turn in the discourse of monetary theory. This development unveils a potential avenue for reflection on the configuration of monetary policy, its transmission mechanisms, and its potential

implementation in an economy devoid of monetary issuance.

ENDOGENOUS MONEY IN THE POSTKEYNESIAN SCHOOL

The Post-Keynesian school and the three main currents of endogenous money

The post-Keynesian school of thought posits that central banks lack the capacity to regulate the money supply exogenously. Instead, it asserts that the financial system is responsible for creating money in accordance with the financing requirements for the production of goods and services (Piegay & Rochon, 2005). This process occurs when credit is granted to companies or households according to their production or consumption needs. The post-Keynesian school of thought posits that, within the prevailing phase of the capitalist system, central banks lack the capacity to regulate the money supply in its entirety. Instead, these institutions employ the short-term interest rate as a means of monetary control, determining its level in accordance with a predetermined inflation target (Bain & Howells, 2003).

Endogenous money creation is defined as the process by which money is generated within the financial system. It refers to the supply of money that serves as the driving force behind the demand for credit, which is in turn requested by individuals and companies to meet their investment and consumption needs. The concept of endogenous money enables the analysis of the intrinsic aspects of money as a medium of exchange. According to Palley (1994), the money supply is determined endogenously by the credits created when banks respond to the asset and liability management decisions of (i) commercial banks, (ii) portfolio decisions of private banks, and (iii) the demand for bank loans. Conversely, Fontana (2003) asserts that:

The fundamental principle of endogenous money theory posits that the money supply of a nation is contingent on the demand for bank credit, which, in turn, is influenced by economic variables that impact the level of production (p. 291).

In their study, Cruz & Parejo (2016) emphasize that endogenous money is associated with the function and evolution of the economic system and institutions. They contend that innovations in the banking system emerged as a consequence of the needs associated with the expansion of production and investment in a growing economy. In the nascent stages

of the economy, the money supply was regarded as inelastic. This misperception led to the economy's failure to reach full employment. According to this theory, saving was considered a prerequisite for investment, thus framing banking as a mere conduit for savings. However, this viewpoint becomes inaccurate when the banking system attains a point where its liabilities become the predominant medium of exchange, enabling banks to expand credit beyond a multiple of their reserves. Post-Keynesian economists posit that there are three primary streams of endogenous money: The following three concepts are of particular relevance in this discussion: horizontalists, structuralists, and liquidity preference.

Theory of the monetary circuit

The theory of the monetary circuit, which has been exposed and supported by economists such as Parguez (2000), Graziani (2003), and Piegay & Rochon (2005), as well as other economists of the Franco-Italian current, conceptualizes the economy as a cyclical flow (Gutiérrez Naranjo, 2022). In this theoretical framework, money acts as the engine that drives this cycle, facilitating the start of production and the circulation of goods.

According to Piegay & Rochon's (2005) theoretical framework, the concept under scrutiny encompasses the genesis, application, and dissolution of monetary assets within the context of the productive system. The proponents of this theory contend that it furnishes a seminal elucidation of the cyclical flux of monetary funds, encompassing their genesis within the banking system and their ultimate repatriation within said system. In the initial phase of the cycle, bank debts are established. In the subsequent phase, these debts are extinguished. In the third phase, the process of acquiring fixed capital goods occurs. According to Levy Orlik (2017), the process unfolds as follows (see Figure 1):

"(...) In the first phase of the circuit the banking system places the debts of solvent companies for a value equal to the mass of wages and, although these can cover requirements for the purchase of fixed capital goods, this does not appear as net debt. The result of the increase in liquidity is the generation of production (consumer and capital goods) and the creation of income for the productive factors (wages and profits).

The second phase (2) generates the conversion of wages into household income for consumption and savings, the function of which is to pay off bank debts. It is argued that

household income plus interest on financial instruments returns to companies via consumption. In this scheme, household savings in the form of bank deposits is a leakage from the monetary circuit (which explains the negative sign).

The third phase of this process 3) closes the monetary circuit through the collection of profits that are transformed into financial savings, by NBFIs that provide long-term financing for the purchase of capital goods, or generate liquidity for illiquid assets (...)" (pp. 78-79).

According to Parguez (2000), the theory of the monetary circuit commences with the differentiation between credit and money. From the vantage point of a double-entry accounting framework, it becomes evident that credit is regarded as a bank asset, whereas money is considered a liability. This finding indicates that they are subject to differential treatment. However, monetary wealth is derived from demand, which is, in turn, influenced by the supply of bank credit. Consequently, the availability of credit can be considered a pivotal factor in the accumulation of monetary wealth (Chávez y Pereira, 2017).

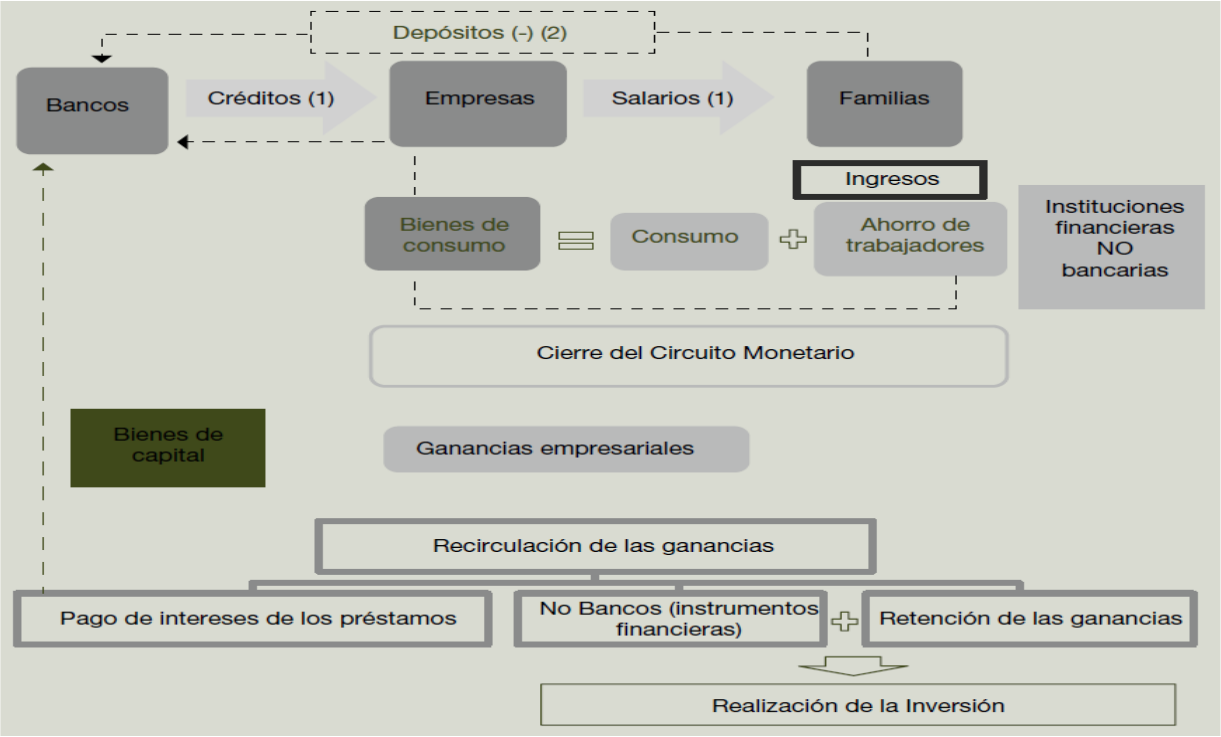

Figure 1: Cycle of the Monetary Circuit.
Source: by authors based on Levy Orlik (2017).

HORIZONTALIST APPROACH

Post-Keynesians of the accommodative tradition—or horizontalists—include prominent scholars such as Kaldor (1985), Lavoie (1982, 1984), Goodhart (1989), and Moore (1988, 1989). These scholars emphasize that commercial banks can acquire supplementary reserves without restrictions at market prices on the condition that confidence in their solvency or repayment capacity is maintained. Consequently, short-term interest rates are considered exogenous and serve as an instrument of monetary policy (Calderón & Hernández, 2010).

In the horizontalist approach, the central bank is responsible for supplying the reserve requirements and serving as the lender of last resort for commercial banks[8]. According to Llerena (2022), the endogenous money approach of the New Keynesian school (new neoclassical synthesis) aligns with the horizontalist post-Keynesian perspective by recognizing the money supply as endogenous and horizontal. This scheme of money supply is present in economies that have their own currency. In contrast, dollarized economies adopt the currency of another country as legal tender.

Consequently, the post-Keynesian horizontalist approach aligns with the neo-Keynesian perspective concerning the contemporary institutional and monetary framework within which the monetary authority operates. In both schools of thought, the Central Bank repudiates the quantity of money in circulation as the central tool of monetary policy, replacing the latter with the determination of the interest rate as the fundamental tool of monetary policy. However, despite the similarities in the transmission mechanism of the interest rate, its changes and their subsequent impact on macroeconomic performance invariably give rise to a divergence between the two approaches (Llerena, 2022).

In the New Keynesian economic paradigm, credit money is conceptualized as a commodity,

[8] Según Velásquez Garzón (2009) la salud del sistema financiero hace que la banca central se «acomode» a las necesidades de reserva de estos bancos y mantenga una actitud pasiva frente a la demanda de crédito.

akin to any other marketable good. The demand for money is modeled with a negative slope, representing the inverse relationship between the demand for money and the prevailing interest rates. Conversely, the supply of money is depicted with a positive slope, reflecting the direct relationship between the supply of money and the prevailing interest rates. The demand and supply for money are balanced in a manner consistent with the dynamics observed in other markets. In this scenario, the interest rate is established as the price of credit money, and the intersection of the supply and demand for credit money determines the equilibrium interest rate. In this paradigm, the interest rate fulfills the function of clearing the money market[9] and contributing to the regulation of economic activity (González Hernández, 2023).

In contrast, the horizontalist post-Keynesian credit money paradigm is predicated on the notion that the quantity of credit money is entirely adapted to the solvent demand for credit (by firms) at the prevailing interest rate. This approach is supported by the notion that commercial banks extend credit to creditworthy borrowers. Therefore, a deposit of value equal to the credit created is the only thing that is recorded. Consequently, the interest rate does not serve the purpose of balancing the supply and demand for money. The interest rate is not regarded as the price of money; rather, it is a politically determined distribution variable. As a result, this rate does not emerge from market equilibrium conditions (Llerena, 2022).

According to the proponents of horizontalism, the short-term interest rate serves as the regulatory mechanism for bank credit demand. This variable is managed exogenously by the pertinent monetary authorities and aims to circumvent potential liquidity constraints. In essence, the money supply resulting from bank credit will exhibit a completely elastic relationship with the prevailing interest rate. This approach does not assign a significant role to the agents' inclination for liquidity (Lavoie, 1992). Consequently, banks are not compelled to restrict the amount of credit they provide, as they are not confronted with

[9] Una tasa de interés por encima de la tasa de mercado genera un exceso oferta de crédito, por el contrario, una tasa de interés menor a la del equilibrio provoca un exceso de demanda de crédito.

the predicament of choosing between maintaining their liquidity or their profitability. Instead, they adopt a passive stance in the face of credit demand (Garzón, 2009).

PREFERENCE FOR LIQUIDITY (VERTICALIST APPROACH)

Keynes was among the first economists to address the issue of liquidity preference within the field. He described the preference for liquidity to the demand for money (verticalist) and identified three forms of liquidity preference. The first form is the transaction motive, which refers to the need for cash for current personal and business exchange transactions. The second form is the precautionary motive, which refers to the need for liquidity for reasons of safety and security. The desire for security regarding the future cash equivalent of a certain part of total resources, and 3) the speculative motive, i.e., the purpose of making profits by knowing better than the market what the future will bring (Keynes, 1965 [1936]).

Within households, the propensity for liquidity influences the composition of assets and liabilities, while household behaviors impact the process of credit creation. Households influence the money supply through alterations in the composition of their financial assets. A decline in liquidity preference prompts households to exchange cash and current deposits for short-term and long-term assets (Fontana, 2003). In circumstances where liquidity is limited, financial institutions exhibit a propensity to augment their lending activities, a response to the firms' demand for new credit. This dynamic, in turn, leads to an increase in the money supply through the bank multiplier effect. Consequently, the verticalist approach posits that the interest rate of the money-liquidity market is endogenously determined by the interaction between demand and supply. In this market, the demand for money is determined by the liquidity preference function, while the supply is determined by the quantity of money controlled by the central bank.

STRUCTURALIST APPROACH

Notable authors who embody this structural post-Keynesian approach include Minsky (1957; 1986), Rousseas (1986, 1989), and Earley & Evans (1982). According to this approach, central banks regulate monetary aggregates by manipulating the supply of reserves. However, they posit that although central banks possess the capacity to restrict the supply of bank reserves through quantitative means, the resulting liquidity constraints

experienced by commercial banks are mitigated by the management practices employed by these institutions. The management of liabilities is a primary concern, and it has been observed to give rise to an escalation in financial innovation, a phenomenon that is predominantly reinforced within the paradigm of financial globalization (Aybar & Harris, 1998). However, despite the fact that central bank reserves can be to some extent exogenously controlled by the authorities, the supply of money-credit is endogenous, due to endogenous variations of the monetary multiplier (Calderón & Hernández, 2010).

It has been posited that as the demand for bank credit increases, the interest rate will concomitantly rise. That is to say, the money supply function will be upward sloping, thereby establishing an inelastic relationship between demand for credit and the interest rate. Moreover, the interest rate is endogenously determined by the structure of the credit market (Palley, 1996). According to structuralists, the central bank's authority over short-term interest rates should be regarded as a fundamental aspect of its financial management responsibilities. This perspective challenges the conventional view that the central bank's influence is confined to short-term interest rates. Structuralists contend that the central bank possesses the capacity to regulate the monetary base in a manner that is conducive to addressing liquidity challenges. Moreover, they propose that the central bank could utilize its regulatory instruments to pursue additional objectives. In addition, structuralists acknowledge the role of commercial banks in managing their liabilities. They assert that commercial banks, confronted with constraints on the availability of reserves imposed by the central bank, will seek funding options that are particularly cost-effective, particularly in periods of rising interest rates.

It is noteworthy that both the structuralist and horizontalist perspectives within the post-Keynesian paradigm concur that interest rate determination does not occur as a consequence of market clearing. Consequently, these viewpoints diverge in their interpretation of monetary policy implementation by central banks. Accordingly, the overarching objective of the post-Keynesian approach is to influence the real sector of the economy, encompassing factors such as the unemployment rate, income distribution, and output growth. This approach diverges from the New Keynesian theory by prioritizing these objectives over the control of inflation, which is maintained at a low and stable level.

Consequently, the concept of endogenous money postulates that, in order for households to allocate a portion of their income toward savings, businesses must first secure financial resources to underpin their investments. Lavoie (2022) posits that concepts such as liquidity preference, increasing risk, and financial fragility need not be eschewed in order to adopt a horizontalist position. According to the author, these concepts, initially excluded from the post-Keynesian analytical framework, must be deliberately reincorporated to consistently explain macroeconomic developments in times of economic slowdown, stagnation, or recession. This reincorporation is particularly crucial in dollarized countries.

ENDOGENOUS MONEY IN A SMALL, OPEN ECONOMY WITH NO CURRENCY OF ITS OWN

Dollarization in Ecuador

In the early 1980s, Ecuador abandoned its developmentalist economic policies and embarked on an IMF-led stabilization and structural adjustment programme (1982-1992). In 1982, Ecuador declared a moratorium because it could no longer service its foreign debt. Between 1982 and 1989, the most notable factor in the distribution of the debt was the significant increase registered in the debt to the government, which went from a participation of 5% in 1982 to 61% in 1989, due to the process of sucretization of private debt.Similarly, international financial institutions such as the International Monetary Fund and the World Bank increased their participation from 26% in 1982 to 33% in 1989 (Rodriguez, 2017).

The decade of the 1990s would be marked as a period of expanding financial capital, through a process of converting loans into bonds (the so-called Brady bonds). To give viability to this process of debt marketization, a series of economic policy reforms were introduced in the government of Ballén, who enacted several projects such as the Law of the Monetary Regime and State Bank (1992), the General Law of Financial Institutions (1994).This caused a decline in the confidence of Ecuadorians in their currency, since 1990 this uncertainty gave way to the use of the US dollar from an unofficial way in Ecuador (Rodriguez, 2017).

Between 1995 and 1998, Ecuador experienced a series of internal and external shocks.

These shocks, together with public policies and the behaviour of private banks, led to unsustainable levels of public debt service. As a result, the Ecuadorian government announced its willingness to restructure and default on its external public debt. In this scenario, the debt service went from 8.3% in 1998 to around 18% in 2000, and the external debt as a percentage of gross domestic product (GDP) went from 81% to 156% in the same indicated period (Rodriguez, 2017).

In mid-1998, the low confidence that people maintained in the national currency and in the financial system that had suffered a devastating blow, causes the restructuring of Filanbanco due to solvency problems, the largest banking entity in the country at that time (by assets), and by March 1999, five other banking entities had entered into closed reorganization, generating that on 8 March 1999, the Superintendent of Banks gave way to a mandatory national holiday. At that moment, Ecuador's monetary history recorded the trilogy that put an end to the sucre. An explosive increase in the monetary base, the explosion of the exchange rate and the highest inflation recorded in its history (De la Torre Muñoz, 2019). Starting in 2000, after a deep crisis in private banking that affected public finances, Ecuador abandoned the sucre as legal tender and formally dollarized.

Monetary policy in Ecuador?

In Ecuador, dollarization is operationalized as a fractional reserve scheme. This means that only a portion of the total money circulating in Ecuador is US dollars. The remaining part (which has been growing) is comprised of monetary holdings that can be converted to dollars or are denominated in dollars. This suggests that under the context of dollarization in Ecuador, the capacity for primary issuance is relinquished, while secondary issuance is sustained. The expansion of secondary issuance has been demonstrated to increase aggregate liquidity through the endogenous creation of money. Consequently, the volume of deposits available to economic agents has been shown to increase. According to De la Torre Muñoz (2019), economic agents are able to draft payments or transfers from these deposits. These payments or transfers can be made by financial means of payment or demand part of their deposits in cash. It should be noted that the first form does not require the participation of international reserves to execute those transactions, while the second

does (De la Torre Muñoz, 2019).

It is imperative to undertake a comprehensive examination of economic growth within the context of an endogenous monetary framework. This examination must encompass the theoretical underpinnings of household liquidity preference, particularly in a dollarized nation that is susceptible to external shocks due to a terms-of-trade disadvantage. A prime example of this phenomenon can be observed in Ecuador. Dollarization is widely regarded as a hindrance to the implementation of stabilization policies in the short term. However, it is not often examined as a potential obstacle to medium- and long-term growth (Llerena, 2022).

The prevailing perspective posits that dollarization serves to stabilize inflationary trends by anchoring them in the context of lower levels and thereby facilitates the economy's return to a trajectory of sustainable growth. This phenomenon may be attributed to the preeminence of two neo-Keynesian premises within the monetary discourse: the neutrality of money in the long run and the negligible influence of the balance of payments on economic growth. However, it is imperative to inquire whether monetary policy can contribute to macroeconomic stability in a country that does not have its own currency.

Even in economies that adopt a dollarized currency, the financial system generally possesses the capacity to generate deposits, provided that banking institutions perceive a profitable opportunity to extend credit to business entities. The fundamental distinction between a dollarized economy and an economy with the capacity to issue its own currency pertains to the source of funds utilized by commercial banks to maintain their reserves at the central bank. In the context of a nation's own currency, commercial banks primarily rely on the central bank, often referred to as the "lender of last resort," as their primary source of financial support. Conversely, within a dollarized economy, commercial banks seek external funding from global financial markets to replenish their bank reserves (Llerena, 2022).

What has been presented in the previous paragraph implies that money is endogenous in all countries of the world, regardless of whether the economy has its own currency or not. For Keynes and post-Keynesians, money is considered as a stock that can be divided between money and financial assets. That is, in this perspective, households receive their

income in legal tender and will distribute it between consumption and savings, from the amount saved in each period, households configure their portfolio of decisions by distributing these savings in a set of assets that differ not only by their degree of liquidity, level of return, duration (short, medium and long term), but also by the propensity to substitute according to their expectations regarding the current and future economic performance (Llerena, 2022).

According to Llerena (2022), in a dollarized economy, the central bank unquestionably loses the role of lender of last resort. The central bank could only play the role of residual lender if it had certain reserves for that purpose, if it had a liquidity fund to cover runs on deposits, or if it had a lender of last resort for itself, like the Federal Reserve of the United States of America (FED). Furthermore, in this configuration of the economy, the new lender of last resort for the banking sector will not be the Federal Reserve System (FED), but rather the external sector.

In the event of a recession or depression, the dollarized economy typically experiences an increase in the preference of households for liquidity as a store of value. In such circumstances, commercial banks often seek liquidity from external lenders to meet the demands of depositors. In essence, the ability to confront moments of uncertainty hinges on the capacity to depend on liquid cash from the external sector for distribution to households. In essence, addressing the issue of demand for deposits in physical currency necessitates that a dollarized nation inevitably assumes the role of a net external debtor, consequently confronting the financial obligations associated with escalating external debt service. The ratio of external debt service to current account surplus will increase even more during prolonged periods of economic slowdown, thus leading to a self-reinforcing spiral of indebtedness. This increase in private external debt exerts a deleterious effect on both economic activity and the current account (Llerena, 2022).

According to Llerena (2022), when households prioritize their preference for cash, they prompt commercial banks to return a portion or all of their deposits, resulting in a decline in bank reserves deposited in the central bank. This phenomenon occurs as a result of external financing obtained from the rest of the world. This phenomenon results in the

accumulation of financial assets by households in non-dollarized regions, while investors in dollarized countries accrue financial liabilities[10].

From the perspective of Moore (1989), Palley (1998), Fontana (2003), and Forges (2018), the endogeneity of money is a result of the productive process itself and the need to finance the investment expenses of entrepreneurs. Consequently, commercial banks generate credits (create money) to meet these needs. Consequently, the implementation of a pro-cyclical monetary policy (austerity) has the potential to precipitate successive increases in the real interest rate. This phenomenon could result in a contraction of the economic cycle and a deterioration in workers' bargaining power.

A fundamental question emerges: when considering this dynamic within a small, open economy: Is it possible for the monetary authority, in this case the Central Bank, to implement a counter-cyclical monetary policy if it does not possess the capacity to issue currency?

A dollarized economy is a financial system in which the interest rate structure is determined by the market, rather than by a central bank or governmental authority. Consequently, the central bank of a dollarized economy can implement its monetary policies, despite the absence of a conventional exchange rate policy. In essence, the forfeiture of a monetary policy instrument does not preclude the utilization of alternative instruments within the monetary policy framework to address economic crises.

Consequently, even in the context of dollarization (where the printing of money is not a viable option), the central bank is equipped with an array of monetary policy instruments. These include, but are not limited to, interest rate determination, the rediscount window, open market operations, and bank reserve requirements. In this sense, it should be noted that monetary policy in this scenario would aim at determining the real interest rate

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[10] Bajo esta concepción, en el corto plazo, el crecimiento económico se determina por las expectativas de los empresarios respecto a su posible tasa de ganancia. Lo que se denomina como mercado crediticio conecta la tasa de interés y la producción, y a su vez, los empresarios solventes piden financiamiento al sector bancario para financiar sus planes de producción, mientras que, la oferta de crédito es endógena y se acomoda totalmente a la demanda crediticia (Llerena, 2022).

endogenously to influence investment, consumption, and production.

As demonstrated in the preceding paragraph, the response to the aforementioned inquiry is positive. The central bank of such an economy possesses the capability of utilizing reserve requirements as a means of implementing monetary policy. Consequently, the adverse effect of an augmentation in households' predilection for cash on economic activity can be mitigated through the instrument of countercyclical monetary policy, namely reserve requirements. Two scenarios are posited: in the first, a complementary use of another monetary policy instrument (e.g., the determination of a prime rate) that affects the determination of the interest rate of the credit money market is proposed, and in the second, a complementary process between the monetary policy measure and fiscal policy tools is proposed (Llerena, 2022).

Llerena (2022) posits that, in the medium and long term, a dollarized economy exhibits a lower growth rate compared to an economy with its own currency. In the context of a recession, a dollarized economy is subject to a range of endogenous and exogenous shocks. These include, but are not limited to, an increase in households' preference for liquidity, a widening of the public deficit, and the accelerated deterioration of the current account due to the increase in the service of public and private external debt. Consequently, aggregate demand becomes inadequate, leading to a decline in short-term economic growth.

Despite the proposal of two distinct scenarios, it is observed that in a dollarized economy, the implementation of monetary policy is contingent upon the action of fiscal policy to stabilize the economic cycle. In a dollarized economy, when the government faces a public deficit, it attempts to finance it through external and internal debt. The government seeks to place bonds issued in the rest of the world. However, the country's economic conditions cause lenders to react by punishing the price of the bond with a higher risk premium for a possible default (higher country risk). As a result, the coupon of the external debt will increase. In this scenario, the financial monetary system assumes significant importance due to its capacity to function as a residual buyer of public debt. This role enables it to influence the interest rate of the consolidated public debt, thereby aligning with national objectives, such as maintaining low public debt interest rates. This inexpensive financing should be

allocated to public spending with countercyclical characteristics. That is to say, current spending should be directed to stimulate demand for goods and services from industrialists and investment spending to promote the development of large strategic projects of national interest. These projects should also stimulate demand for goods and services in the national industrial sector, thereby increasing inter-sectoral demand (Llerena, 2022).

Total liquidity and behavior of the ecuadorian economy: pre and post dollarization evolution

According to McLeay et al. (2015), it is posited that, in the modern economy, the bulk of money is generated through loans that are granted by banking institutions. The creation of these loans, which are not subject to upper limits or cost free of charge, necessitates that banking institutions impose limitations on the amount of funds they extend to maintain profitability within a competitive banking system. It is imperative to comprehend the roles of the Central Bank and commercial banks within the financial system. It is evident that both entities fulfill interrelated functions. The primary function of commercial banks is to attract funds from the public and subsequently grant loans. To mitigate the risk of public deposits within the ECB financial system, these entities are obligated to maintain a portion of their resources in the form of reserves, also known as the legal reserve.

The central bank can exert indirect influence over the amount of money in circulation in the economy through the legal reserve requirement. An increase in the reserve requirement results in a decrease in the available resources of commercial banks for lending purposes. This is due to the fact that banks are required to maintain a higher percentage of reserves, which in turn reduces the amount of money available for lending to the public. This, in turn, leads to a reduction in the liquidity of the economy. Conversely, a reduction in reserve requirements by the Central Bank enables financial institutions to allocate additional funds toward lending, thereby increasing the total amount of money in circulation.

In Table 1, the temporal progression of the currency—in this case, the sucre—and the aggregate liquidity (M2) of Ecuador are observed. Over the course of the five-year period under consideration, a marked increase in the monetary issuance was observed. This increase can be quantified by the growth in the money supply, which rose from 1608602

million sucres in 1995 to 8461586 million sucres in 1999. This increase in the money supply would have led to inflation during these years. This increase is indicative of an expansive monetary policy by the Central Bank, a response to its financing needs to stimulate the economy.

Table 1. Evolution of currency issuance and total liquidity (M2) (millions of sucres)

Period	Monetary Issuance	Monetary Base	M2
1995	1608602	2411848	12574427
1996	2321693	3062398	18083008
1997	2906495	4029362	24424452
1998	4192128	5689445	34862060
1999	8461586	9685465	50819902

Note: prepared by authors with data from the Central Bank of Ecuador

As is the case in other countries, the Ecuadorian economy experienced events and exogenous shocks. In 1980, the sucre had depreciated against the dollar, reaching 28 sucres per 1 dollar. By the year 2000, the national currency was worth 25000 sucres per 1 dollar, causing the country to experience the highest inflation in its history (Andrade, 2019).

Conversely, total liquidity (M2) exhibited a substantial increase, rising from 12574427 million sucres in 1995 to 50819902 million sucres in 1999. This increase in M2 signifies an expansion in the allocated funds for transactions and savings, thereby delineating economic growth and inflation. The relationship between the issuance of sucres, the monetary base, and M2 indicates the different levels of the money supply and how they interacted during that time before dollarization (see Table 2).

Table 2. Evolution of total liquidity (M2), Balance of payments, GDP, Household expenditure, and private sector credit in Ecuador (millions of dollars)

Period	Liquidity Growth Rate	Growth rate of the Balance of Payments	Growth rate of GDP	Household Expenditure Growth Rate	Growth rate of loans to the private sector
2004	13.19%	107.02%	8.21%	6.44%	27.49%
2005	20.43%	137.03%	5.29%	4.43%	25.65%

2006	15.62%	-119.61%	4.40%	4.35%	19.54%
2007	15.97%	-1161.66%	2.19%	2.01%	15.05%
2008	22.58%	-32.65%	21.08%	14.30%	26.04%
2009	8.22%	-383.44%	1.23%	2.69%	0.11%
2010	19.37%	-54.21%	11.25%	13.47%	24.02%
2011	19.65%	-122.44%	13.98%	10.49%	22.30%
2012	16.40%	-313.94%	10.91%	9.04%	14.44%
2013	13.41%	-417.21%	8.19%	7.41%	9.89%
2014	14.42%	-122.99%	6.93%	5.42%	9.50%
2015	-1.13%	250.66%	-2.39%	1.84%	-3.72%
2016	16.49%	-181.07%	0.65%	-1.87%	6.33%
2017	9.96%	-254.01%	4.36%	4.47%	17.38%
2018	5.66%	-95.06%	3.05%	2.74%	15.04%
2019	8.02%	-122.09%	0.11%	0.44%	11.44%
2020	10.10%	30829.56%	-10.90%	-8.72%	2.82%
2021	9.80%	-3.25%	11.80%	15.77%	14.82%
2022	7.47%	-35.07%	8.35%	8.57%	14.90%
2023	6.68%	-94.78%	4.32%	6.80%	9.14%

Note: prepared by authors with data from the Central Bank of Ecuador

As illustrated in Table 2, the study incorporates a range of economic variables, including the total liquidity, balance of payments, gross domestic product, household expenditures, and private sector credit, extending across the period from 2003 to 2023. These indicators not only reveal the internal dynamics of the Ecuadorian economy but also illuminate its role in global trade. Over the initial decade, a consistent growth trajectory in total liquidity is evident, with an average annual increase of 12.62%, extending through 2023. This behavior may be indicative of a monetary expansion, driven by the generation of credits with an average growth rate of 14.11%, allocated for various transactions. The growth rate of the balance of payments exhibited significant fluctuations, with periods of deficits and surpluses. In 2004 and 2005, the balance of payments demonstrated positive growth, resulting in a variation of 107.02% and 137.03%, respectively. However, subsequent years witnessed an alternate course of action, as evidenced by the negative balance of payments, which can be interpreted as a component of external financing that was employed to cover the balance of payments.

A moderate yet discernible trend of growth is evident in the GDP. Notably, in 2013, the

most substantial growth was recorded, marked by a 13.98% increase, indicative of an uptick in production and economic activity. The rise in consumption can be attributed to the surge in household spending, which exhibited a 13.47% growth in the previous year. This indicates that households had access to credit, enabling them to expand their spending. However, a thorough examination of Figure 2 reveals significant variations in the country's Gross Domestic Product (GDP) during the observed period. From 2001 to 2007, the primary drivers of GDP growth were private consumption, investment, and exports of primary goods, reflecting a period of significant dynamism in these economic sectors. According to the BCE (2021), in 2008, the GDP exhibited a 6.4% growth, propelled by non-oil value added, despite the adverse impact of imports and the decline in oil value added. In 2009, the GDP contracted and grew by only 0.69% compared to 2008. In 2010, a recovery was observed, indicating a 3.5% growth compared to the previous year. Concurrently, between 2010 and 2014, the average annual growth ranged from 3% to 5%, a development that was found to be strongly associated with the persistent rise in oil prices. However, the drop in oil prices since 2015 slowed down the economy, reaching a growth of only 0.1% in 2015 compared to 2014 (Ángel Borbor et al., 2025).

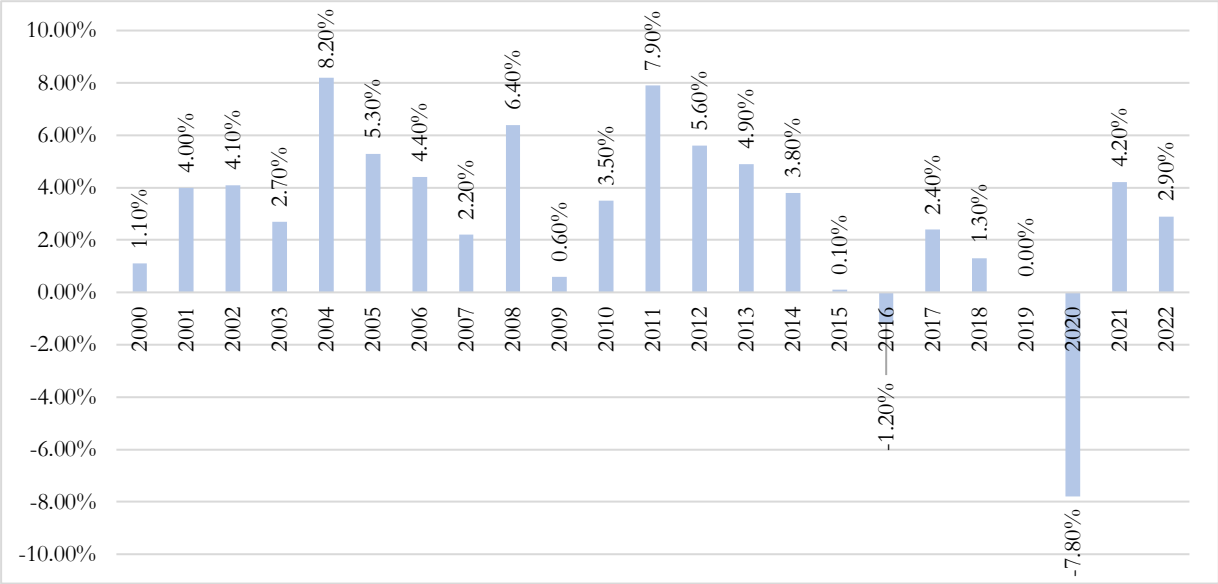

Figure 2: Evolution of the Gross Domestic Product period 2000-2022.
Source: taken from Ángel Borbor et al. (2025)

The analysis of loans to the private sector serves as a direct indicator of the process of endogenous money creation in the Ecuadorian economy. These loans, granted by the financial system to the private sector, represent a significant component of the national economy. A substantial increase of over 400%, indicating heightened investment and domestic consumption, has contributed to economic expansion.

Initially, it can be posited that a positive or negative net flow of foreign currency would coincide with a growth or reduction in the amount of money circulating locally. That is, the evolution of total liquidity would closely correspond to the net flows of foreign currency from abroad. When contrasting both variables, however, it becomes apparent that the expected correspondences are absent. Instead, external flows operate in several instances in a direction counter to the evolution of the total liquidity of the Ecuadorian economy. This observation is supported by the findings of De la Torre Muñoz (2019).

From the perspective of endogenous money in the Ecuadorian economy, a clear monetary and economic expansion is demonstrated within the analyzed periods and a possible association between private sector credit and total liquidity is suggested, indicating that the growth of the latter was driven by the increase in private sector credit, reflecting endogenous money creation. Within the context of endogenous money, enhanced liquidity enables households to secure bank loans, thereby enhancing their quality of life as money circulates. Conversely, an increase in GDP is attributable to rising incomes and sufficient household spending. The genesis of money is attributable to bank credits, which are facilitated by the banking multiplier mechanism. Consequently, money can be regarded as an endogenous phenomenon that is designed to stimulate economic growth. Therefore, the most salient relationship with the presence of endogenous money is found in the increase in production and global liquidity.

CONCLUSIONS

In a small, open, price-accepting economy without the ability to issue its own currency, the monetary sovereignty of the state is lost, as the role of the lender of last resort by the monetary authority is eliminated. In essence, the central bank's capacity to print money and inject it into the economy is diminished during periods of economic distress. This suggests

that commercial banks may not possess an inherent, automatic reserve against financial crises, which could potentially lead to liquidity issues within the economy. These issues, in turn, could compromise the stability of dollarization itself.

In the context of dollarization, the economy, such as the Ecuadorian one, is exposed to exogenous shocks that impact the country's fragile financial sector with varying degrees of severity. Financial fragility has been identified as a significant challenge associated with dollarization. Concurrently, this fragility gives rise to an exacerbation of household distrust, which, in turn, engenders a marked preference for liquidity on the part of the affected households. Specifically, when households perceive that the Ecuadorian economy is in a recessionary or depressive phase, they tend to accumulate physical American dollars as a store of value rather than any other asset.

In Ecuador's case, the loss of its capacity to issue its own currency has led to the assumption that its monetary policy has been effectively abandoned. This suggests that the full range of instruments available to the policy has been relinquished, including the control of interest rates, quantitative easing, the rediscount window, open market operations (OMO), the legal reserve, domestic investment, the issuance or acquisition of securities for public or private credit, the credit channel, and twist operations. In Ecuador, it has been hypothesized that the government's primary financial strategy to address its fiscal deficit is austerity in fiscal policy, which involves the reduction of public expenditure in response to a decline in public revenues. This approach is believed to exacerbate the procyclical nature of fiscal policy, thereby hindering economic growth and compelling Ecuador to increasingly rely on external borrowing, which is subject to the constraints imposed by country risk.

In this study, the fundamental question has been formulated: A central question of this study is whether the endogenous creation of money has influenced the long-term economic sustainability of Ecuador, given its status as a dollarized economy.

The aforementioned inquiry suggests another internal problem regarding the feasibility of implementing monetary policy in a dollarized economy. The present study has demonstrated, from a post-Keynesian vantage point, an exhaustive examination of the intrinsic relationship between the real sector and the monetary sector. Moreover, evidence

has demonstrated that even in contexts of dollarization, the monetary authority wields a range of monetary policy instruments. The fundamental interest rate can be established in a manner that maintains its position as a low and stable benchmark, thereby facilitating the reactivation of the economy. Moreover, the monetary authority has the capacity to utilize legal reserves as a counter-cyclical instrument to manage international reserves, thereby fulfilling at least three functions (Llerena, 2022):

- In order to address the demand for cash from households, it is necessary to draw from the physical money held in their vaults;
- it is essential to maintain a minimum liquidity reserve, which functions as a pseudo liquidity fund, with the aim of mitigating systemic risk; and
- The remaining proportion of the reserves abroad should be allocated to either preserving the international reserve or investing domestically in OMA at the discount window.

In the present research, the relevance of banks and the financial system in the creation of money to boost economic production alongside businesses and households is highlighted. The available data regarding liquidity, trade balance, and private sector credit indicate that the creation of endogenous money has been a fundamental part of the sustainability of dollarization. Furthermore, this creation can in turn become an essential tool to achieve a process of sustained economic growth for Ecuador.

The adoption of the dollar as Ecuador's official currency resulted in the Central Bank's loss of its capacity to issue money. However, the monetary authority retains the ability to set the base interest rate, while commercial banks determine the profit margin over the base interest rate when financing loans to industrialists. The variability of this profit margin is contingent upon the liquidity risk premium as determined by the banking sector. This suggests that even in contexts of dollarization, the monetary authority retains the capacity to establish the base interest rate. This rate may be set from a counter-cyclical policy or an income distribution approach. Moreover, the Central Bank possesses the authority to stipulate the legal reserve requirement, a mechanism employed for the management of bank reserves and the regulation of international trade.

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