CHAPTER 4. EXAMINATION OF THE DYNAMICS AND STRUCTURAL ASPECTS OF FINANCIAL DOLLARIZATION IN UKRAINE

4.1. Defining financial dollarization: approaches to assessment and categorization

Financial dollarization is a phenomenon in which a foreign currency, most often the US dollar, is used for financial transactions and is held as a store of value in place of the national currency. It can be present in various forms, including deposit dollarization (DD), loan dollarization (LD), and portfolio dollarization. The measurement and classification of financial dollarization have been an ongoing topic of interest for economists and policymakers, as high levels of dollarization can negatively affect the financial system's stability and the monetary policy's effectiveness. Various methods of assessing the degree of financial dollarization include ratio analysis, regression analysis, and portfolio optimization models. Additionally, financial dollarization can be classified based on its source, such as natural or induced dollarization, as well as its duration, whether it is short-term or long-term. Some common methods of measuring financial dollarization are presented in Table 4.1.

Table 4.1. Methods of assessing financial dollarization

Method	Definition
Currency Composition of Bank Deposits	This measure calculates the proportion of total bank deposits held in foreign currency, typically the US dollar. It indicates the extent to which the public holds foreign currency deposits in the banking system.
Currency Composition of Bank Loans	This measure calculates the proportion of total bank loans issued in foreign currency. It indicates the extent to which the banking system is providing foreign currency loans to the public.
Currency Composition of Capital Market Instruments	This measure calculates the proportion of capital market instruments issued in foreign currency, such as bonds and equities. It indicates the extent to which the capital market is denominated in foreign currency.
Currency Composition of Money Supply	This measure calculates the proportion of the money supply which is in foreign currency. It provides an indication of the amount the public holds foreign currency in circulation.

Source: developed by authors based on [1]

There are several methods for assessing financial dollarization, which primarily focus on deposit and loan dollarization. One method is the ratio of foreign currency deposits or loans to total deposits or loans, which measures the percentage of foreign currency in the banking system. Another method is the currency mismatch index, which calculates the difference between the share of foreign currency assets and the share of foreign currency liabilities in the banking system. A third method is a Herfindahl-Hirschman index, which measures the degree of concentration of foreign currency deposits or loans in a banking system. Other methods include the exchange rate pass-through index, which measures the sensitivity of prices to exchange rate changes, and the sensitivity of non-performing loans to exchange rate changes.

In addition to the currency composition view, some define currency substitution and dollarization index. Currency substitution is the process of measuring the extent to which individuals and organizations switch between various currencies, such as the national currency and the US dollar, in reaction to fluctuations in exchange rates or interest rates. The dollarization index is a comprehensive measure that accounts for multiple factors, such as currency composition and currency substitution, in its assessment.

These methods help policymakers and researchers to assess the level of financial dollarization in a country and to design appropriate policies to manage its potential risks.

Financial dollarization can be classified in different ways, depending on the scope and focus of the analysis. One common classification distinguishes between deposit and loan dollarization, as discussed earlier. Another classification distinguishes between external and internal dollarization. External dollarization refers to the use of foreign currencies, particularly the US dollar, for international transactions, trade, and external debt. In contrast, internal dollarization refers to the use of foreign currencies, particularly the US dollar, within the domestic economy, such as for savings, investment, credit, and pricing. Internal dollarization can further be classified into official and unofficial dollarization, depending on whether the use of foreign currencies is legal and recognized by the authorities or not. Another classification distinguishes between financial dollarization and real dollarization,

with the former referring to the use of foreign currencies in the financial system, and the latter referring to the use of foreign currencies in the real sector, such as for wages, rents, and consumption. These classifications reflect different aspects and implications of financial dollarization and can be useful for policy analysis and evaluation.

Another way to classify deposit and loan dollarization is to distinguish between retail and wholesale dollarization. Retail dollarization refers to the use of foreign currency by households and small businesses, while wholesale dollarization refers to the use of foreign currency by large corporations and financial institutions. These classifications can be useful for policymakers and researchers in identifying the main drivers of dollarization and designing appropriate policy responses.

While dollarization is often viewed as a negative phenomenon, a certain amount of foreign currency assets is normal for an economy, according to Khvedchuk et al.[2]. The concept of financial dollarization can be broadly divided into two types: natural and induced. Natural dollarization refers to the level of currency substitution that would exist in an economy in the absence of any external factors, such as financial market restrictions or macroeconomic instability. On the other hand, induced dollarization is the result of specific policies, events, or external shocks that lead to an increase in the use of foreign currency in the economy. The distinction between natural and induced dollarization is important, as the policies and measures needed to address them can differ significantly. Understanding the drivers of each type of dollarization can help policymakers make informed decisions about monetary policy, financial regulation, and other economic policies. In practice, measuring the natural level of dollarization is challenging and may differ significantly depending on the unique conditions of each country.

In research on financial dollarization, efforts have been made to determine the natural level of dollarization by controlling the impacts of macroeconomic stability, institutional quality, and other factors that might affect currency choice. Some studies have found that countries with good governance, high macroeconomic stability, and efficient financial markets tend to have lower levels of dollarization, while those with lower levels of these factors tend to have higher levels of dollarization. The notion of

the natural level of financial dollarization holds significance for policymakers and central banks, as it offers a baseline for comprehending the drivers of currency substitution and can influence decisions regarding monetary policy, financial regulation, and other economic policies.

The objective of the research conducted by NBU was to calculate the natural level of financial dollarization in Ukraine. The researchers employed portfolio allocation theory to estimate that the level of FD in Ukraine is approximately 10-20%. They identified various fundamental factors that impact FD, including macroeconomic instability, low quality of governance, interest rate differential, dollarization of the real sector, structural factors, and monetary policy regime.

Financial development in transition economies can lead to dollarization or euroization, which can be driven by three types of factors: the world factor, the regional factor, and the individual country factor [3]. The world factor is generated by financial system development and is common to all countries. The regional factor, such as the EU factor, can be seen in countries joining the EU, leading to convergence processes and affiliation with the union. The individual country factor is a unique set of determinants of financial dollarization in a specific country. This is particularly relevant for countries like Ukraine, which is in the process of becoming an EU member and may experience increased foreign currency dominance due to the liberated market. However, the relationship between financial market development and financial dollarization is a topic of ongoing debate in the literature. On the one hand, it is argued that a well-developed domestic financial market can provide alternative instruments that decrease financial dollarization. For instance, Kishor and Neanidis found that countries with deeper financial markets tend to have lower levels of financial dollarization [3]. On the other hand, the liberalization of financial markets and easier access to foreign instruments may foster financial dollarization. Therefore, the relationship between financial market development and financial dollarization may depend on the specific circumstances of each country, such as the quality of governance, macroeconomic stability, and structural factors. The extent to which the development of the domestic financial market affects financial

dollarization is an important question for policymakers, as it can assist in shaping de-dollarization strategies.

Considering periods of the high volatility of exchange rate, geopolitical concerns, a few banking crises, and the ongoing war in Ukraine, the uncertainty of residents in the domestic currency has increased and urged them to hedge their currency risks and hold savings in foreign currency. With low-developed financial markets, diversifying options occur to be very limited.

During the first decade of the 21st century, FD has been the focus of researchers and among the highest policy makers' concerns. Inflation targeting, an increase in institutional credibility, and overall openness of the economy enhanced the decline in the FD rates for most countries, including Ukraine. Successful steps towards market deepening, anchoring expectations, and managing exchange rates helped to decrease dollarization and mitigate associated risks.

Deposit dollarization is primarily formed by people's expectations of future inflation and local currency depreciation. High inflation or unstable inflation expectations can lead to a loss of confidence in the national currency, which may drive individuals and businesses to hold more of their wealth in dollars or other foreign currencies. This can increase the level of dollarization in a country's financial system. On the other hand, when inflation is low and stable, it can help to strengthen confidence in the national currency, which may reduce the demand for foreign currencies and decrease dollarization. Central banks can use monetary instruments, including adjusting interest rates or implementing inflation targeting with the aim to control inflation and inflation expectations and decrease the level of dollarization.

As historically foreign currency interest rates are very low in comparison with the local currency it would be rational to assume that local currency instruments would be in favor of the investors. Though it's rarely the case as in periods of high inflation interest rates offered by commercial banks hardly cover costs associated with inflation, so investors may prefer to invest in foreign currency with close to zero yields to at least hedge their funds from depreciation and obtain the relatively more stable currency at the end of a deposit period. In times of high macroeconomic uncertainty about future inflation and exchange rates and when there are any

restrictions on the flow of foreign currency, FX deposits may be the only investment opportunity that will cover economic agents' risks of funds depreciation, especially when the financial market is not developed or the access to the foreign markets is costly or limited.

Typically financial sector development can be distinguished into two categories: (i) deepening of the financial market, followed by the development of various alternative investment opportunities, such as medium and long-term domestic currency bonds, development of the forward market to mitigate exchange rate risks, indexed instruments to hedge from inflation, etc, (ii) and market liberation, in response to the openness of foreign markets and consequently investments in favor of foreign instruments due to the lower country-specific risks. The former is expected to decrease financial dollarization through a wider range of attractive domestic instruments. The latter instead is expected to increase financial dollarization through investment in foreign markets instruments.

Various kinds of research discuss the relationships between the depth of the financial market and financial dollarization. From one point of view, a deeper financial market can provide more opportunities for borrowers and lenders to transact in the local currency, thereby reducing the need for foreign currency borrowing and lending, hence reducing the level of FD. On the other hand, a shallow financial market can limit the availability of local currency financing options, leading to a greater reliance on foreign currency financing. This can increase the level of financial dollarization. In addition, a deeper financial market can offer more risk management instruments, such as derivatives and insurance products, which can help mitigate currency risk and reduce the need for foreign currency borrowing and lending.

Asel finds that financial sector development has a significant negative impact on deposit dollarization, indicating that a more developed financial sector can reduce dollarization. However, the impact on loan dollarization is insignificant, suggesting that further research is needed to better understand the relationship between financial sector development and loan dollarization. In contrast, Bannister's research reveals that financial dollarization, specifically deposit dollarization, has an adverse effect on financial development, which implies that a high level of dollarization slows down

the financial deepening. Another finding is that this negative relationship is common for countries with periods of high inflation [4].

High financial dollarization can have negative consequences for an economy. According to Levy-Yeyati financial dollarization can have several consequences, including increased vulnerability to external shocks, increased interest rate volatility, reduced effectiveness of the monetary policy, reduced ability of the domestic financial system to intermediate savings, and an increased likelihood of financial crises. In addition, Levy-Yeyati notes that dollarization can lead to a higher cost of capital for firms, which can in turn reduce investment and economic growth [5].

Financial dollarization can have a significant impact on a country's economy, particularly on its banking sector. The relationship between exchange rate fluctuations and DD is based on the concept of balance sheet effects. When the domestic currency depreciates, the value of foreign currency-denominated assets and liabilities increases, leading to a rise in FD. On the other hand, when the domestic currency appreciates, the value of foreign currency-denominated assets and liabilities decreases, leading to a decline in FD. As a result, exchange rate volatility can be a major factor in determining FD levels in an economy.

The relationship between FD and exchange rate fluctuations has been explored by various studies, including Leiderman et al., who argue that higher levels of FD can lead to a closer association between exchange rate fluctuations and nonperforming loans. This can have negative implications for the banking sector, which may struggle to collect payments from borrowers who have taken out loans denominated in foreign currency [6]. In this context, the depreciation of the national currency can bring currency exchange gains from borrowers, but also losses when repaying deposits. As a result, commercial banks often keep interest rates on foreign currency credits at a relatively high level compared to national currency credits, while interest rates on foreign currency deposits remain low compared to domestic deposits. This allows them to hedge against exchange rate fluctuations and minimize their exposure to potential currency exchange losses. However, this can also discourage households and firms from borrowing and depositing in national currency, exacerbating the issue of financial dollarization. Additionally, exchange rate volatility

can affect the profitability of banks, especially when they hold a large share of foreign currency-denominated assets and liabilities. Banks may also engage in currency speculation to hedge against exchange rate risk, which can further fuel currency substitution.

Therefore, policymakers and central banks need to carefully consider the effects of interest rate differentials and exchange rate changes on the banking sector and the wider economy when implementing monetary and financial policies.

4.2. Investigating the dynamics and structural characteristics of financial dollarization in Ukraine

The financial sector is a critical component of the economy, and its stability plays a crucial role in the economic development of a country. One of the significant concerns for policymakers is the degree of financial dollarization, particularly in emerging economies. Ukraine is such an economy where the level of dollarization in

the banking system has been a persistent issue, impacting its economic stability and growth prospects.

In Figure 2.1. the dynamics of dollarization of deposits and loans to the residents (except for deposit corporations) are presented. The dynamics of deposit and loan dollarization in Ukraine have been a topic of concern for macroprudential regulators and researchers alike. The dollarization in the crisis years 2008-2009 (with the deposit dollarization reaching 50% and the loan dollarization of 59.1%) heavily influenced the economy of the country. The war on East of the country caused the deepening of the crises and increased the levels of dollarization in 2015 with deposit dolarization of 58.8% and loan dollarization 59.8%. However, since then, it was observed the record decrease of dollarization, which was, to our mind, influenced by the implementation of effective monetary policy, especially regarding inflation targeting. Besides, the experience from previous crisis periods, particularly the high currency risk, made hryvnia-denominated loans more attractive compared to foreign currency loans. As of February 2022, the amount of loans in foreign currency has fallen to 30%, and the share of deposits in foreign currency reached 36%.