

Preconditions and Obstacles for Monetary Integration: Prospects for Euroization of Ukraine

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Abstract Monetary integration may take various forms ranging from exchange rate peg to establishing a monetary union with a single currency and single monetary policy like in the EU. An extended view on the criteria for efficient monetary integration is tested by considering whether Ukraine is ready for monetary integration with the Euro Area (EA). The criteria are grouped into 6 categories: economic openness, intensity of economic relations, integration and convergence with EA, external and internal imbalances. The indicators in Ukraine are compared to the past data and either the values in EA or official thresholds. Currently 2/3 of the criteria are met by Ukraine. The most advanced situation is in economic integration and relations with EA, while lack of convergence with EA is the main obstacle.

Nevertheless, Ukraine has made progress by the majority of criteria in comparison to the situation before the Association Agreement was signed, primarily in external balances, economic links and integration with EA. Some negative trends were related to divergence with EA and internal imbalances. If the general positive trend continues, pegging to the euro may become an optimal regime in several years and in the longer run euroization may become a feasible choice for Ukraine.

Keywords: monetary integration, convergence criteria, single currency, Euro Area, economy of Ukraine.

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1. Introduction

Monetary integration may range exchange rate peg to a monetary union (MU) like the Euro Area (EA). This leading MU inspired discussion on following its experience by other countries. Euro became the 2nd international currency. Despite a period of pessimism after 2008, enlargement of EA continued until 2015. Other EU Member States (MSs), except Denmark are to join the euro when they are ready. Some non-MS practiced unilateral euroization (Montenegro, Kosovo, several microstates and overseas territories), hard pegging (e.g. Bosnia and Herzegovina, CFA franc zone) or softer types of orientation to the euro. Monetary integration may provide benefits (lower transaction costs, monetary stabilization, boosting international trade and investments) if countries are ready for this. Preconditions are discussed among researchers. Several ones are formalized in the EU legislation.

Ukraine has chosen the EU as its main integration partner. It is involved in deep trade and sectoral integration with it thanks to the Association Agreement (AA). As a non-MS and even non-candidate country, Ukraine has no formal obligations for monetary integration. But feasibility of unilateral pegging or euroization should be within a research agenda considering growing importance of the EU as an economic partner and institutional anchor for Ukraine. The aim of this paper is to check whether monetary integration of Ukraine with EA became more feasible than before.

2. Literature Review

Preconditions for monetary integration are discussed within the theory of optimum currency areas. Mundell (1961) defined “a currency area as a domain within which exchange rates are fixed”. Such area may be based on one currency or a system of currencies with fixed exchange rates. Optimum currency area should be based on factor mobility (capital and labor) within it. McKinnon (1963) stressed on the role of economic openness (ratio of tradeable and non-tradable goods). Englander and Egebo (1992) paid also attention to importance of: no initial over- / undervaluation of the national currencies before establishing a MU, similar industrial structures leading to lower probability of asymmetric shocks, joint trends in real wages and other economic indicators, labor flexibility, and fiscal federalism to buffer regional demand shocks.

Goto (2002) analyzed several criteria: share of intra-regional trade, labor migration, confluence in macroeconomic indicators (money supply, inflation, interest rates, stock prices, exchange rates, real GDP, exports and disturbances on investment functions with interest rate, real GDP and time trend as factors). Eichengreen (2004) defined a list of preconditions:

- political solidarity and ability to delegate monetary policy to an international institution which is accountable (to elected officials), representative (interests of various groups are considered), efficient (Pareto optimal policy outcomes) and effective (decisions without unnecessary delays);

- culture of monetary policy transparency (credible commitments and explaining means to achieve goals);
- open capital accounts;
- common transmission mechanism (the way the markets react to monetary policy decisions, which depends on the national financial system structures).
- Bonpasse (2006) wrote about substantial trade links between members, labor and capital mobility, correlation of economic cycles and compatibility of economic structures. Benczes (2014) summarized preconditions as:
- production factor mobility to smooth trade imbalances, inflation and unemployment rates;
- flexibility of prices and wages;
- economic openness (motivation to avoid exchange rate uncertainty, depreciation is less beneficial);
- product diversification (to avoid asymmetric shocks);
- similar preferences for inflation (different vision whether to curb inflation or to stimulate employment may disrupt solidarity);
- fiscal solidarity and integration (fiscal policy coordination and supervision, crisis resolution mechanism, joint guarantee for public debt, international budget transfers, common taxes and budget).

Mogaji (2015) mentioned risk-sharing mechanism of automatic fiscal transfers (common fiscal authority and government bail-out of MSs), banking union (integrated banking supervision, crisis resolution and deposit insurance), labor mobility, commodity market integration and diversification, openness and size of economy (large share of intra-union trade), political integration, similar inflation rates, price and wage flexibility.

Alesina and Barro (2000) claimed that there are more incentives for “a small economy with a history of high inflation that is close (in a variety of different ways) to a large and monetarily stable country”. Lyzun (2017, p. 345-346) noted that all the new MSs in Central and Eastern Europe which joined the euro were small economies (< 0.6% GDP of the EU). Cohen (2003) considered either existence of a dominant country or institutional network which links MSs and establishes common interests.

Hein and Truger (2004) noted adverse effect of a single monetary policy under low correlation of economic cycles in a MU MSs. The EU common budget is too small to offset the effect. They suggest a better fiscal policy coordination between the states and with monetary policy. Benczes (2014) wrote that vulnerability to asymmetric shocks may be an obstacle unless a cost-sharing mechanism is established so that the affected country may benefit from solidarity between the MSs. The shocks would be more symmetric if the MSs are strongly related to each other.

There is also criticism about the preconditions. Frankel and Rose (1996) claimed that entering economic and MU can stimulate trade itself, which promotes business

cycle synchronization. The effect makes the trade link precondition less relevant: “a country is more likely to satisfy the criteria for entry into a currency union *ex post* than *ex ante*”. Eichengreen (2004) was critical about excessive “pseudo-preconditions”:

- fiscal transfers between MSs (to countries in crisis or less developed ones);
- deficit ceilings, sanctions and fines;
- numerical convergence criteria.

Kunroo (2015) marked a shift in the optimum currency area theory from the emphasis on the state of economy (labor mobility, economic openness, product diversification) to policy trade-offs (inflation, policy integration, wage and price flexibility, real exchange rate variability).

Formal convergence criteria for accession to EA are specified in Article 140 and the Protocol No 13 in the Treaty on the Functioning of the European Union, and assessed in the convergence reports (CR):

- a) Price stability. Inflation $\leq x+1.5\%$, where x is the average inflation in the 3 MSs with the lowest inflation. MSs with low inflation due to exceptional circumstances can be excluded from calculating the mean.
- b) Sustainability of the government financial position: budget deficit $\leq 3\%$ GDP and public debt $\leq 60\%$ GDP (no excessive deficit procedure). Small incompliance can be tolerated under exceptional situation or if the ratios are sufficiently diminishing. The Treaty on Stability, Coordination and Governance specified rules for structural deficit depending on the ratio of public debt to GDP.
- c) Participation in the Exchange Rate Mechanism for at least 2 years (exchange rate fluctuation margins $\pm 15\%$ to the euro) without severe tensions at the foreign exchange market (exchange rate volatility, difference in short-term interest rates, interventions at the foreign exchange market and international financial aid are considered).
- d) Convergence of interest rates. Interest rate $\leq x+2\%$, where x is the average yield for the long-term government bonds in the 3 MSs with the lowest inflation. The criterion was disregarded in Estonia under its extremely low public debt.

CR also take into account real effective exchange rate, structure of the balance of payments, external debt, net international investment position, private liabilities, unemployment, trade and financial integration with EA, unit labor costs and other price indicators.

The legal convergence criteria include legislation ensuring independence of a central bank and its integration into the Eurosystem, single spelling of “euro”, prohibition of direct lending to public institutions (except financial ones) or their privileged access to financial market. MSs should also join the Single Supervisory Mechanism and European Stability Mechanism at the moment they join the EA.

As for Ukraine, Karazinov (2013, p. 172-197) wrote that in the 1st decade of the XXI century the positive stimuli for monetary integration with EA included smaller size of Ukraine, diversification of economy, labor migration and trade openness. The

negative motivation was low business cycle correlation with EA, excessive budget deficit, higher inflation and interest rates, exchange rate volatility, less developed banking system and stock market, lower money/GDP ratio, domination of dollar denominated foreign liabilities of banks and decreasing foreign reserves in Ukraine. Thus, Ukraine was not ready for euroization yet. But it could be a strategic goal in the long run. The necessary steps should include increasing the share of euro in international transactions, foreign reserves and financial instruments; pegging to dollar and euro basket as an intermediate goal, currency and financial legislation harmonization, payment integration etc.

Glushchenko and Tkalenko (2016) compared the shares of euro and dollars in transactions as a precondition for pegging hryvnia either to dollar or euro. Savelyev et al. (2017) supposed that early joining the euro would be unrealistic, but pegging hryvnia to the euro might be advantageous under tight links with the EU. Lyzun (2017, p.368-372) claimed that pegging under currency board may be risky for Ukraine considering budget expenditures under the hybrid war and frequent election campaigns, export structure and overvaluation of hryvnia. Skepticism was also expressed about unilateral euroization of Ukraine and meeting convergence criteria, especially on inflation.

3. Methodology

In the present work we group the monetary integration preconditions into 6 categories. The values for Ukraine are compared to either:

- the average values in EA or its particular countries;
- or Greece (slightly larger EA economy than Ukraine) especially when an indicator depends on economy size;
- or the thresholds specified in the latest available CR (ECB, 2020).

Qualitative scoring is used in summary tables to assess Ukraine's compliance and recent trends in it. ++ means major conformance or progress, + minor conformance or progress, 0 neutrality, mixed evidence or no significant progress, - minor discrepancy, -- major discrepancy, ? no information.

Several details are explained for some indicators. Gross private capital flows are calculated as total of absolute values $|x|$ of inward and outward private capital flows within the components: capital transfers, equity FDI, debt FDI, financial derivatives, other investments, % GDP.

Herfindahl – Hirschman index (HHI) for goods exports diversification is calculated with the formula:

$$HHI = \sum s_i^2 \quad (1)$$

s_i – share of product i in total exports of a country, %. $0 < HHI < 10000$. $HHI=0$ under equal shares of infinite number of export products. $HHI=10000$ under exporting only a

single product. 65 groups within SITC 2-digit classification are used for goods exports. 21 group classification is used for services exports.

Structural difference in GDP (ISD) is calculated with the formula:

$$P(i, k) = P(s_t = k \mid s_{t-1} = i) \quad (2)$$

S_{ia} – share of the sector i in value added in Ukraine in a certain year, %; S_{ib} – share of the sector i in value added in EA in 2019, %. $ISD = 0\%$ when the GDP structures are perfectly similar. $ISD = 100\%$ means that they are perfectly different.

4. Results

4.1 Economic Openness (A)

1. Trade openness. In 2020 foreign trade (exports + imports) in Ukraine was 79% GDP in comparison to Greece (71%). The value in Ukraine is smaller than in 2019 (90%) due to the global pandemic, and than in 2011 (106%).

2. Capital mobility. The gross private capital flows in Ukraine were 16.7% in 2019. They substantially dropped in 2013 (from 24.5% in 2012) and were rather stable since that time. The ratio in Greece was on average 33.6% (2011-2019) but ranged between 16.8% in 2014 and 49.3% in 2015. An inverse capital mobility indicator, the correlation between total investment and gross national savings (% GDP), was both high in 2007-2013 and 2014-2020 (0.78 and 0.80) in comparison to Greece (0.46 and -0.56). But in 2019 the net FDI inflows in Ukraine (3.8% GDP) were larger than in Greece (2.4%), although smaller than in 2011 (4.4%). Net FDI outflows were small in both countries (0.4% and 0.3%) with no distinct trend.

3. Labor mobility. The number of Ukrainian employees working abroad was estimated as 2.2-2.7 million or 13-16% of the total employment in Ukraine. Personal remittances received by Ukraine were equivalent to 4.8% GDP in 2011. They suddenly soared to 9.3% in 2015 and then were stable at 10-11% before reaching 9.9% in 2020, which is much larger than in Greece (0.3%). According to Pieńkowski (2020), the remittances increased the VAT revenues in Ukraine by 0.8% GDP, although emigration may have negative impact too (e.g. education expenditure). The remittances were large enough to influence exchange rate of the hryvnia and were less volatile than FDI and portfolio investments.

4. Size of economy. Major benefits of monetary integration for small economies are attributed to their larger openness. Ukraine (GDP by exchange rate = \$155 billion in 2020) is smaller than the median economy in EA (GDP of Portugal = \$228 billion). On the other hand, Ukraine is larger economy than any other EU MS that joined EA since 2002 (the largest one, Slovak Republic, has the GDP = \$105 billion).

Table 1. Economic openness

Criteria, source	Current state	Changes
A1, World Development Indicators (WDI)	+	-
A2: Gross capital flows, AC Balance of Payment Statistics and World Economic Outlook (WEO)	-	-
Correlation between total investment and gross national savings, AC WEO	-	0
FDI inflows, WDI	+	-
FDI outflows, WDI	-	0
A3: Employees abroad, Pieńkowski (2020)	++	+
Personal remittances, WDI	++	+
A4, WEO	0	0
Total score	2.3/8	-1

Note: AC – authors' calculations based on...

4.2 Economic Relations with EA (B)

1. Trade links. The share of the EU in Ukrainian merchandise exports and imports increased from 28% in 2011 to 39% in 2020, the share of EA grew from 18% to 25%. This is less than the share of EA in Greek exports (43%), but the upward trend is obvious.

2. Financial links. In 2020 the EU's share in the FDI (stock) in Ukraine was 73%, the share of EA – 68%, without Cyprus – 39%. In 2013 they were 75%, 69% and 38%. But we should consider also reimport of Ukrainian capital. Cyprus was the main destination of the outward FDI from Ukraine: \$5.9 billion by 2020 (mostly before 2010) out of \$6.3 billion to the entire world in comparison to \$10.4 billion FDI imported from Cyprus. In 2019 67% of the FDI flows to Ukraine were from EA (29% without Cyprus). In mid 2021 the share of 7 main EA countries among the owners of Ukrainian private external debt (except Eurobonds and publicly guaranteed debt) was 66.5%, the share of 10 main EU MSs was 68.4%.

3. Role of the euro in economic transactions. It is the 2nd most important currency in current transactions (in 2020 28.2% for receipts and 42.9% for payments) especially for imports of goods and current transfers. Euro is more important in trade with the EU (in 2020 50.2% of exports of Ukraine and 66.7% of imports). Since 2015 the share of euro in current transactions has grown 1.5-1.8 times especially in primary income and exports of goods. In mid 2021 the share of euro-denominated debt in the total external debt of Ukraine was 23.1% (dollar-denominated debt 62.2%, SDR-denominated debt 9.6%). The euro was the 3rd most important currency of deposits in Ukraine after hryvnia and dollar. In Sept. 2021 its share was 7.1% and 12.7%

(deposits of households and nonfinancial corporations). In recent years the euro was gradually substituting dollar in total foreign deposits (18.9% and 39.8% after 21.1% and 14.8% in 2015).

4. Confluence in exchange rates. Hryvnia depreciated by 128% against the euro within 2 years in 2014-2015. After 2017 the exchange rate fitted the fluctuations margins +/-15% against the euro. The devaluation in 2020 was 6.4%. But the volatility of the depreciation against the dollar (standard deviation of % change = 4.3) was even lower than against the euro (8.2) in 2017-2020 (0.8 and 5.9 in 2010-2013). Thus, closer orientation of hryvnia to the dollar remains.

5. Labor migration. In 2020 the number of resident permits for Ukrainian citizens in the EU was 601 000 (27% of the total number of such permits in the EU). Most of them were issued in Poland (488 000) – a MS outside EA. 32 000 were issued by EA countries. The value dropped from 40 000 in 2019 due to the pandemic. The number has not grown much since 2011 (29 000) in comparison to those issued in the entire EU (120 000). But some of the Ukrainians applied for the EU citizenship. In 2017 67% of Ukrainian employees working abroad were employed in the EU (54% in 2012). The most popular destinations were Poland (39%), Russia, Italy and Czechia. In 2018 33% of the remittances originated in Poland, 32% in other EU MSs. In 2020 56.9% of the personal remittances to Ukraine were from the EU (22.4% without Poland and Czechia). The share has grown since 45.3% in 2015 (21.7%). Thus, in the medium run Ukraine enjoys stabilization role of labor integration with the EU (mainly non-EA MSs).

Table 2. Economic relations with EA

Criteria, source	Current state	Changes
B1, UNCTAD	+	+
B2: FDI, State Statistical Service of Ukraine (SSSU)	+	0
Private external debt, National Bank of Ukraine (NBU)	++	?
B3, NBU+ AC: Payments for trade	+	++
Payments of income	+	++
External debt	+	?
Deposits	+	+
B4, AC WDI	+	0
B5: Resident permits, Eurostat + AC	+	+
Employees, Pieńkowski (2020)	+	?
Personal remittances, Pieńkowski (2020) + NBU	+	0
Total score	5.5/10	+3.5

4.3 Economic Integration with EA (C)

1. General economic and political integration. Ukraine has established Deep and Comprehensive Free Trade Area (few exceptions are mainly in agricultural sector) with the EU within a complex AA. There is a sufficiently deep trade integration and increasing level of sectoral integration as a result of ongoing implementation of numerous EU regulations and directives into Ukrainian legislation. Provisions for improved access to labor market in the AA and visa-free-treatment for non-employment short-term trips promoted movement of Ukrainian people to the EU. Nevertheless, Ukraine has not established a customs union, common market, economic or sectoral unions (capital market, banking, fiscal etc.) with the EU. Lockdowns under the pandemic impeded bilateral migration too.

2. Solidarity. Ukraine is neither a MS nor a candidate country to share the full-scale benefits of intra-bloc solidarity. But the AA established special relations between the EU and Ukraine. A provision about the European integration vector has been added to the Constitution of Ukraine. Opinion polls show that 64% of Ukrainian citizen had a favorable opinion about the EU in 2014, 72% in 2015 and 79% in 2019.

3. Fiscal transfers. According to AC European Commission (2021), in 2019 the main net recipients from the EU budget were Poland (equivalent of 2.3% of its GNI), Hungary (3.6%) and Greece (1.9% or €3.5 billion). Ukraine as a non-MS cannot benefit from its main instruments, although it receives financial aid from the EU. In particular since 2014 the EU provided more than €15 billion to support reforms in Ukraine. Most are loans (several times larger than grants), but they also helped to stabilize macroeconomic situation. The total net official development assistance and official aid received by Ukraine from various sources was 0.5% GDP in 2011, then it peaked 1.6% in 2016 after launching the AA and dropped to 0.7% in 2019.

4. Leading country / developed system of institutions. Despite Germany is the largest EU economy it is far from having a dominant position like the US in USMCA or Russia in EAEU. But the EU has a well-developed system of supranational institutions which act as an integration attractor itself.

5. Accountable, representative and effective monetary policy institution. Under bilateral mechanism of euroization Ukraine would be able to rely on the experienced European Central Bank, which policy approach has been reformed under new challenges (economic crisis in 2008-2009, public debt and bank crises, and the pandemic crisis). Under more feasible scenarios (unilateral euroization or pegging) Ukraine would have to rely on its National Bank.

Table 3. Economic integration with EA

Criteria, source	Current state	Changes
C1: Trade integration	++	++
Sectoral integration	+	+
Migration regulation	+	+
Banking union	--	0
C2: EU membership	--	0
Special relations	++	++
EU popularity in Ukraine, Pew Research Center (2020)	++	+
C3, Eastern partnership (2018) + AC WDI	+	+
C4	++	0
C5	+	+
Total score	6/10	+3.5

4.4 Convergence with EA (D)

1. Structural similarity of economies. Structures of the economies of EA and Ukraine are similar by $\frac{3}{4}$ (ISD = 0.262 in 2020) with a minor progress (0.284 in 2011). The main differences include larger sectors in Ukraine (agriculture, forestry and fishing: 10.8% of the value added in Ukraine in 2020 / 1.7% in EA in 2019; mining and quarrying 5.3%/0.2%; electricity, gas, steam and air conditioning supply 3.4%/1.8%; wholesale and retail trade, repair of motor vehicles and motorcycles 16.3%/11.0%; transportation and storage 7.3%/4.8%) and smaller sectors (manufacturing 11.8%/16.4%; construction 3.3%/5.3%; accommodation and food services 0.7%/3.1%; real estate activities 7.4%/11.3%; professional, scientific and technical activities 3.8%/6.7%; administrative and support service activities 1.7%/5.0%; human health and social work activities 3.2%/7.5%). Convergence took place mainly in mining and quarrying (after 7.6% in 2011 in Ukraine), transportation and storage (9.2%). Divergence was in manufacturing (13.8%).

2. Business cycles synchronism. The correlation between the GDP growth rates in Ukraine and EA was always high in XXI century, but only if the period of 2014-15 is excluded (0.90 in 2001-2010, 0.25 in 2011-2020, but 0.80 in 2009-2013+2016-2020). This precondition is met if no other similar extraordinary event (revolution, loss of control over territories, serious escalation of the hybrid war) takes place in Ukraine. Greece had a smaller correlation with EA (0.59 in 2011-2020, -0.03 in 1998-2007), but this is an exception: most of EA countries are highly synchronized economies. But volatility of the GDP growth in Ukraine is much higher than in Greece and EA. The

standard deviations for these economies in 2006-2020 were 6.5, 2.7 and 0.3. Thus, Ukrainian economy may be vulnerable if a single monetary policy is unsuitable for Ukraine under asymmetric shocks.

3. Similar transmission mechanism of monetary policy (depends on the development of financial sector). Quantitative easing under developed financial sector mostly leads to growth of asset prices and financial market bubbles, while under underdeveloped financial sector it results mostly in higher inflation. In 2018 market capitalization of listed domestic companies was 3.4% of GDP in Ukraine (15.7% in 2011), 18.1% in Greece and 54.6% in EA. In 2019 domestic credit to private sector in Ukraine was 30% GDP (with continuous downward trend after 71% in 2011 and 75% in 2014). The indicator in EA was 94% in 2020.

4. Similar inflation. In 2020 inflation in Ukraine was 2.7%. It was higher than the reference value (1.8%) in CR. Moreover, the value was unusually low for Ukraine as a result of the pandemic and lockdown measures. It is expected to be 9.5% in 2021. In the previous decade it was too volatile (between -0.3% in 2013 and 49% in 2015 after devaluation).

5. Similar interest rates. In Jan.-Oct. 2021 the yield for the domestic government bonds was 11.42%. This was larger than the threshold 2.9% in CR. The yield was volatile enough (17.79% in 2018, 9.16% in 2016, 14.29% in 2012, 9.17% in 2011). The lending rate was 15.9% in 2011, 21.8% in 2015 and 14.3% in 2020. In Italy the lending rate was 2.3% in 2020 and 4.6 in 2011.

Table 4. Convergence with EA

Criteria, source	Current state	Changes
D1, AC Eurostat + SSSU	+	0
D2, AC WEO	+	0
D3, WDI: Market capitalization	--	--
Domestic credit to private sector	--	--
D4, WEO	-	0
D5: Yield for domestic government bonds, NBU	--	0
Lending rate, International Financial Statistics	--	0
Total score	-2/10	-2

4.5 External Imbalances (E)

1. Export diversification. In 2020 HHI for goods exports diversification in Ukraine was 983 with no substantial changes in recent years (1132 in 2011, 990 in 2016). Exports diversification is much lower than in 2020 in EA (414) and in Greece (764). A decade

ago Ukrainian exports were largely dependent on metal and ore exports (38% in 2011), but their share in 2020 was smaller: 27%. Agricultural, food and vegetable oil products became the leading export product group (18% in 2011, 44% in 2020). Under a crisis food exports are more stable due to their lower income demand elasticity since it is necessary for current consumption. Metals are used for production of investment and durable consumer goods, demand for which drops substantially under recession. As for services exports, in 2020 HHI in Ukraine reached 1812 (1545 in 2011, 1478 in 2019). In 2020 the index was 914 in EA and 3445 in Greece. In Ukraine original dependence on transport services exports decreased from 42% in 2011 to 31% in 2020. Computer services exports increased from 3% to 32% and turned out to be more resilient under the pandemic.

2. No overvaluation / undervaluation of the national currency. In 2018-2020 there was a 3-year increase in real effective exchange rate of hryvnia by 22%, which is beyond the reference range (-/+11%) in CR. In the past decade the indicator was smaller and volatile enough (-29% in 2013-2015, +3.5% in 2010-2012). But the current account in Ukraine suddenly improved from -2.7% GDP to 4% in 2020 (as a result of shrinking imports under the lockdown) and is expected to be -0.7% in 2021. These values fit the reference range (between -4% and +6%) in CR. Another major improvement to +1.7 was in 2015 after -9.2% in 2013. The external balance on goods and services was only -1.1% GDP. It was the decade minimum after the trade deficit peaks in 2013 (-9.2%) and 2018 (-8.7%). Thus, hryvnia is only slightly overvalued in contrast with the substantial overvaluation before.

3. Trust in the national currency. As for exchange rate stability, see section B.4. Other indicators of trust include the share of national currency in deposits and sufficiency of foreign reserves. In Sept. 2021 66% of deposits of residents at deposit corporations in Ukraine were denominated in national currency in comparison to 56% in 2011, 63% in 2013, 55% in 2014. Foreign reserves had dropped from 28% external debt (5.4 month of imports) in 2010 to 6% (1.2 months) in 2014 and then restored to 22% (5 months). The inverse indicator of foreign reserve sufficiency (broad money / total reserves) changed from 2.2 times to 10.7 and 2.4. These trends show restoration of relative trust in hryvnia in the middle run.

4. Net international investment position. It was equal to -14% GDP in Dec. 2020, which was above the threshold -35% in CR. Ukraine has improved its position both since the minimum in 2015 (-42%) and since a stable year of 2011 (-26%).

Table 5. External imbalances

Criteria, source	Current state	Changes
E1, UNCTAD + AC: HHI for merchandise exports	-	0
HHI for services exports	0	-
Resilience of the main exports	+	++

E2: Real effective exchange rate, AC WDI	-	--
Current account, WEO	+	++
Trade balance, WDI	0	++
E3: Exchange rate stability, AC WDI	+	0
Share of national currency in deposits, AC NBU	+	+
Foreign reserves, WDI	+	-
E4, AC NBU + WEO	+	++
Total score	2/8	+5

4.6 Internal Imbalances (F)

1. Fiscal stability. The general government budget balance in Ukraine was -6% GDP under the pandemic (worse than the threshold -3%). It is expected to be -4.6% in 2021. The budget balance was sound enough in 2015-2019 (between -1.2% and -2.3%) after the deficit peak in 2013 (-4.7%). General government gross debt first soared from 40.5% GDP in 2013 to 79.5% in 2015 and then gradually dropped to 60.8% in 2020 and is expected to be below the 60% threshold in 2021 (54.3%). It is much better than 97.5% in EA.

2. Strength of banking system. Most of the bank soundness indicators improved after the banking crisis in 2014-2016 (table 6). There is mixed evidence about whether they were better or worse than in 2011. The indicators in EA countries vary a lot. Ukraine has better ratios for regulatory capital and return on assets, but worse for non-performing loans.

Table 6. Financial soundness indicators of deposit takers, %

Indicator	Ukraine 2011	Ukraine decade extremum	Ukraine 2020	Greece 2020	Italy 2020	France 2020	Germany 2020
Regulatory capital / risk-weighted assets	18.9	12.3 (2015)	22.00	16.7	19.3	19.9	19.2
Return on assets	-0.7	-12.6 (2016)	2.8	-0.6	0.1	0.3	0.2
Liquid assets / short term liabilities	94.7	98.4 (2017)	86.8	53.5	97.7	26.0	169.6

Non-performing loans / total gross loans	14.7	55.5 (2017)	41.0	27.0	4.4	2.7	1.1 (2019)
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3. Balanced economic growth. In 2019 domestic credit to private sector in Ukraine was 30% GDP (see details in section D.3). The upper threshold for private sector debt in CR was 133%. In 2017 the consumption-deflated growth of house prices in Ukraine was negative (-9.1%) and gradually became positive to reach +3.8% in 2020. It is below the threshold +6% specified in CR. In 2020 unemployment in Ukraine was 9.2%. It was quite stable since 2014 when it had risen from 7.2% in 2013. The value is better than the threshold 10% in CR.

4. Flexibility of prices and wages. Ukraine has never had an annual deflation except in 2013 (-0.2%), which questions flexibility of prices together with claims about insufficient competition in some sectors. But unofficial wages or extra payments to employees practiced by some employers and lower activity of trade unions lead to flexibility of wages in Ukraine as it is easier to decrease such payments in hard times. E.g. in 2016 informal employment in Ukraine was estimated to be 24.3% of the total employed population and the share of workers who allegedly fail to declare part of their wages was 12.4%.

Table 7. Internal imbalances

Criteria, source	Current state	Changes
F1, WEO: Government budget balance	-	0
Public debt	+	--
F2, IMF financial soundness indicators: Regulatory capital	++	+
Return on assets	+	+
Liquid assets	+	-
Non-performing loans	--	--
F3: Domestic credit to private sector, WDI	++	+
House prices, AC SSSU + WEO	++	-
Unemployment, WEO	0	-
F4: Prices, WDI	-	?
Wages, International Labour Organization (2018)	+	?
Total score	2.5/8	-3

5. Conclusion

An extended view on the criteria for efficient monetary integration is tested in this study by considering the case of Ukraine, a non-Members state associated to the EU. Such integration can be implemented either in a mild form of pegging to the euro or more ambitious unilateral or even multilateral euroization of Ukraine.

According to our methodological framework, the simple average score for all the categories is +0.3. This means that the majority preconditions $(1+0.3/(1-(-1))) = 65\%$ are met for monetary integration. But about 1/3 of the criteria are not satisfied, which makes euroization to be still a risky undertaking. The most advanced situation is in economic integration and relations with EA, while lack of convergence with EA is the main weakness. In particular, Ukraine is especially advanced in labor mobility, trade integration and credit links with the EU, association status and attitude towards the EU, bank capital adequacy ratio, absence of overborrowing by private sector and of real estate bubble, while the EU provides a well-developed institutional attractor. The major obstacles include: non-membership in economic and banking union, a different monetary policy transmission mechanism due to underdeveloped financial sector, high interest rates and non-performing loans.

Nevertheless, Ukraine has made progress by the majority of criteria compared to the period before the AA was signed. The main progress was in external balancing, economic links and integration with EA: in particular in establishing a FTA+ and implementing the AA, raising export resilience by shifting towards food and IT services, balancing current account and trade balance, and increasing role of the euro in current transactions. The main negative trends were related to divergence with EA and internal imbalances (in particular, shrinking financial sector affecting monetary transmission, real appreciation of hryvnia, accumulation of public debt and non-performing loans, although currently there is a short-term progress by the latter two indicators). If the general positive trend continues, pegging to the euro may become an optimal regime in several years and in the longer run euroization may become a feasible choice for Ukraine.

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