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The impact of banks liquid reserve and food export on economic development during conflict

Abstract. Bank liquid reserve and food production provides a lifeline for effective and productive economic activities.

The objective of this paper is to analyse the effect of banks liquid reserve and food export on economic development during conflict and used Ukraine's data as a case.

Problem statement. Bank liquidity position triggers a trade-off between bank credit risk performance and bank profitability. A delicate balancing act thus subsists between holding high liquidity at the expense of credit lending, investment boosting and economic growth, profit returns and credit risk incurrence.

Purpose of the article. The purpose of this article is to evaluate how a combined effect of bank liquidity and food export affects economic growth, the degree of growth and the slant of growth.

Unresolved aspects of the problem. there is scarcity of literature on the joint effect of bank liquidity and food export on economic growth of a country in conflict – particularly in contemporary Ukraine case.

Presentation of the main material. The paper applied a quantitative approach by using the multiple regression model to examine the relationships. Secondary data on bank liquid reserve, food export and GDP for Ukraine was collected from economic indicator data archives of the World Development Indicators.

Conclusions. Results from the analysis indicates that bank liquid reserve and food export have a significant impact on Ukraine's economic performance during the war. The overall F-statistic is Signiant at P=0.000496. Furthermore, bank liquid reserve is significant at P=0.000495 with a positive regression coefficient of 122.3883. In addition, food export is significant at p=0.006234 with a negative regression coefficient of -131.289. The model's coefficient of correlation is high at 0.884089 showing a close correlation. In addition, coefficient of determination (R^2) is high at 0.781613 and adjusted R^2 at 0.737936 which indicates a good model fit. The positive coefficient for bank liquid reserved indicates that bank liquid reserve has a positive and significant effect on Ukraine's economy during the war, which implies that the capacity of banks to attract more liquid reserve provides significant assistance to Ukraine's economic resilience during the time of conflict. Although food export is significant, but it has a negative coefficient emanating from the obstructions of exports logistics during the conflict as alternative routes of export comes at higher costs. The findings contribute to the literature by indicating that a healthy bank sector with sufficient liquid reserve is vital to support economic vibrancy and resilience during conflict.

Keywords: *Bank liquidity, Bank reserve, Food export, Economic growth, Credit risk; Investment*
JEL Classification: G21; G28;O1; Q17
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Introduction. Credit availability and financial stability are the key primary avenues through which bank liquid reserves impact economic development and resiliency. Often required by central banks as a prudential requirement, bank liquid reserves are the percentage of bank assets held in cash or near-cash form. On the one hand, banks would possess less cash availability for lending when reserve level requirements by the central banks are high. This is because if central banks require the banks to place a higher percentage of banks' deposits with the central bank, this reduces the level of liquid reserves with the banks to offer loans and credit facilities (Acharya & Rajan, 2024; Mora, 2014). This could slow the pace of economic development by decreasing the availability of credit, which would limit investment and the expansion of the private sector.

Maintaining sufficient liquid reserves helps banks to honour withdrawal request obligations and withstand shocks to the economy. Long-term sustainable growth is promoted by investment attraction, and public confidence is raised when financial institutional remain stable through liquid reserve reliability. Therefore, liquid reserve position of the banks helps to determine the stabilizing effect on the economy. Accordingly, liquid reserved level may have a twofold effect on the economy: higher reserves can protect the economy from crises and thereby promote development in the long term, even though they may restrict credit creation and investment in the short term (Swamy & Narayanamurthy, 2025). The ability of the system to balance these two conflicting effects helps in the short to long term determination of the extent to which liquid reserves affect or impede economic development.

Literature Reviews. The supporting literature is divided into two sections, namely the theoretical foundation; this is followed by other parts which looks at bank reserve and financial liquidity, bank liquid reserve and the economy during conflict, the Ukraine case, lessons from other conflict zones, and food export sustenance role in Ukraine during the war.

Theoretical Foundation. This paper draws theoretical rooting from a mixture of related theories such as theories of Financial Intermediation, Liquidity Preference and Bank Reserve, The Diamond-Dybvig, and the Credit Market Imperfections. The role of banks in mobilizing savings and directing them toward profitable investments is explained by the theory of financial intermediation. According to the theory, banks can lower transaction costs and promote economic growth by pooling their resources. According to this theory liquidity management and intermediation efficiency are intimately related (Gbadebo, 2024). Similarly, liquidity preference theory plays an important paradigm role in understanding the interplay between bank reserve and liquidity. According to the liquidity preference theory, economic agents require liquidity for speculative precautionary and transactional purposes (Bibow, 2013). This implies that to preserve trust and avoid liquidity shortages banks must have liquid reserves. There is however a trade-off between return and liquidity suggesting that holding too much cash on hand could take resources away from more useful applications (Boloș et al, 2025; Acharya & Rajan, 2024). According to Diamond and Dybvigs (1983), when depositor confidence wanes, banks are susceptible to runs. However, the stabilizing function of liquidity in banking systems is highlighted by the fact that sufficient reserves and deposit insurance reduce this risk. This offers a theoretical justification for reserve requirements set by central and/or reserve banks.

Bank Reserves and Financial Stability. Higher reserves according to empirical research act as a liquidity buffer lowering the risk of banking crises (Demirgüç-Kunt & Detragiache, 1998). Additionally, Berger and Bouwman (2009) discover that the development of liquidity enhances systemic resilience fortifying the connection between reserves and stability. On the other hand, reserves might limit the amount of credit available.

Saxegaard (2006) examined the efficacy of monetary policy and excess liquidity in Sub-Saharan Africa. He compared the amount of reserves deposited with the central banks to money in vaults than what is mandated or required by law. Additionally, he highlighted that Both precautionary and involuntary excess reserves serve different purposes which align with single

corporate objective whilst at the same time assists with economic growth. Banks hold them consciously especially to satisfy liquidity or prudential requirements.

Reserves and economic activity are mediated in large part by the availability of credit. Agénor, Aizenman and Hoffmaister (2004) show that excess liquid assets in Asia signals credit constraints during crises while Gambacorta and Marques-Ibanez (2011) show that tighter reserve policies reduce loan growth. Thus, a crucial component in comprehending the macroeconomic influence of reserves is the relationship between reserves and credit. Development is influenced by credit availability primarily through investment. King and Levine (1993) and Levine (1997) found a significant correlation between growth and financial development as measured by credit expansion. Similarly, according to Beck, Levine and Loayza (2000) efficient credit markets encourage capital formation and entrepreneurship. Investment-led growth may suffer if credit is restricted through high reserves demands by the central banks. Development experts suggest that development and reserves have a complicated relationship.

Bank Liquid Reserves and the Economy During Conflict. Armed conflicts present special difficulties for financial systems, which frequently make liquidity constraints worse while also raising the demand for stable financial intermediation. The function of bank liquid reserves in these situations goes beyond simple financial prudence and turns into a vital component of economic resilience. In the face of severe uncertainty, banks with sufficient liquidity buffers can sustain vital payment systems, withstand abrupt deposit withdrawals and keep extending vital credit to priority sectors. Conflict periods raise the risk of unexpected liquidity shortages, disruption of financial systems and erosion of investor confidence. The value of bank liquid reserves becomes more crucial during these uncertain times to act as a cushion to economic shock. This is important as sufficient liquidity cushions enable banks to continue lending to vital economic sectors to meet unforeseen withdrawals and maintain payment systems. Without these safeguards wars can quickly lead to bank failures which exacerbate the devastating effects of war on the economy. First by maintaining trust in the banking system, liquid reserves help to stabilize situations during times of conflict. The need for precautionary withdrawals increases dramatically when businesses and households experience increase uncertainty. To avoid panic-induced bank runs that would otherwise cause the financial sector to become unstable, banks hold adequate liquidity to fulfil their commitments (Diamond and Dybvig 1983). Additionally, bank reserves make it possible to continue giving priority sectors the necessary credit during times of conflict. To pay for urgent necessities like food imports, humanitarian aid and the repair of vital infrastructure, governments frequently turn to the banking sector.

Therefore, it is essential to have a liquid banking system to guarantee that these industries continue to operate even as private investment contracts (Agénor, Aizenman & Hoffmaister 2004). Furthermore, liquidity buffers reduce the chance of a systemic financial collapse during times of conflict when external shocks like currency depreciation, capital flight or hyperinflation occur. The survival of the overall economy depends on banks' ability to absorb shocks and sustain interbank lending through the maintenance of reserves (Demirgüç-Kunt & Detragiache 1998). Liquid reserves hasten economic stabilization during the post-conflict recovery phase. Banks that have enough liquidity at the end of the conflict are better equipped to support reconstruction efforts start lending again and win back the trust of investors and depositors. As a result, liquid reserves help economies to recover more easily and grow over the long run in addition to providing a buffer during times of conflict.

The Ukraine Case. The ongoing war in Ukraine offers a compelling example of how liquid reserves support economies during times of conflict. Ukraine's banking industry remained remarkably stable with no significant bank runs or systemic collapses despite the extensive disruptions caused by the conflict. High capital and liquidity ratios that were above regulatory limits served as the foundation for this resilience guaranteeing the ongoing operation of deposit withdrawals and payment systems (Center for Economic Strategy [CES], 2022; VoxUkraine, 2022).

By establishing temporary capital controls fixing the exchange rate to protect reserves and offering emergency liquidity facilities the National Bank of Ukraine (NBU) further strengthened stability (Redcliffe Partners, 2022). Because of this even during times of war more than 70% of bank branches stayed open and digital payment systems ran virtually without hiccups (VoxUkraine, 2022). More significantly banks started increasing credit by the end of 2023 with corporate lending rising by more than 20% and retail lending by more than 30%. This demonstrated how liquidity buffers helped the financial system not only survive but also aid in recovery efforts (National Bank of Ukraine [NBU], 2024). Thus, the Ukrainian case shows that although having large liquid reserves may limit credit in times of peace, they are an essential lifeline for economic resilience and financial stability during times of conflict. Ukraine is particularly important in this discussion because according to Kyiv Independent, during the early stage of Russian invasion,some parts of Ukraine was occupied, economic activities were affected as Ukraine banks lost over 10 billion hryvnia ($246 million) in March 2022 (**Kyiv independent, 2025**).

Lessons from Other Conflict Zones. Additional evidence of the crucial role of bank reserves can be found in other economies affected by conflicts. For example, insufficient liquidity buffers during the Syrian civil war exacerbated the country's economic contraction by causing widespread banking distress capital flight and the breakdown of intermediation functions (World Bank, 2017). Similarly, the depletion of foreign reserves and poor liquidity management in Lebanon—a country experiencing protracted political unrest and a financial crisis rather than a traditional war—caused a systemic banking collapse that paralyzed credit markets and hampered economic recovery (International Monetary Fund [IMF], 2020). Conversely nations with more robust liquidity positions during conflicts like certain West African states during regional conflicts were better equipped to maintain payment systems and continue making small but vital loans to critical industries (Demirgüç-Kunt & Detragiache, 1998). These examples collectively demonstrate how liquid reserves have two sides: in times of crisis or conflict they are essential for ensuring financial stability, upholding public trust and creating the framework for recovery after a conflict but in times of peace they may seem conservative and limit instantaneous lending opportunities.

Food Export Sustenance Role in Ukraine During the War. The previous sections have examined the role of bank liquid reserve in sustaining the economy of Ukraine as it endured the conflict. This session looks at another important variable that has helped to sustain Ukraine's economy during the war, which is food export. Exports of agricultural products are an important part of the overall economy and have a big impact on economic expansion. Incorporating food exports into your model allows you to separate the precise effect of banking while taking other significant economic variables into consideration. This contributes to a more precise and sophisticated understanding of the connection between financial development and economic growth. Notwithstanding the destruction caused by war Ukraine's agricultural industry has been vital to maintaining both the country's economy and global food security.

Known as the breadbasket of Europe Ukraine was responsible for approximately half of the worlds sunflower oil exports and 10% of its wheat exports prior to the conflict (Wikipedia, 2025a). Ukrainian exports fell precipitously as ports were blockaded in early 2022 but this lifeline was restored with the aid of strategic agreements and flexible logistics. A key factor in the reopening of maritime trade was the July 2022 Black Sea Grain Initiative (BSGI). More than 33 million metric tons of grain and other food products were successfully transported through secure maritime corridors between July 2022 and mid-2023 relieving pressure on the worlds food supply and boosting Ukraines export earnings (Wikipedia, 2025b; SIPRI, 2023; CSIS, 2025).

Ukraine maintained export routes via a humanitarian maritime corridor even after the BSGI ended in July 2023 delivering 40.8 million metric tons in December 2023 alone (CSIS, 2025). Ukraine swiftly adjusted and created overland Solidarity Lanes with EU partners which caused trade in agricultural products to nearly double to €13 billion in 2022 (Transnational Institute, 2022). With monthly outflows of 4-5 million metric tons (prewar levels were approximately 6 million) the

Ukrainian Sea Corridor which was established in mid-2023 has assisted in the recovery of exports to levels that are almost identical to those of the War (UAC, 2024).

These flows from export of food assists with the provision of vital support to the economy's survival such as:

• Financial lifeline: During the war Ukraines top source of foreign exchange earnings has been agriculture exports especially grains and sunflowers which have helped pay for imports and government revenue.

• Impact on the world: Ukraine's ongoing exports helped to ease the worlds food shortage. Its agricultural exports resilience helped stabilize markets and provided food-deficit nations particularly those in the Middle East and Africa with relief (Atlantic Council, 2024).

• Domestic adaptation: To prevent harvesting losses and facilitate exports Ukraine implemented temporary infrastructure and mobile storage after traditional storage capacities were exceeded with assistance from other countries (Transnational Institute, 2022).

Relatively few studies give specific focus on bank liquid reserves as a driver of economic development despite a wealth of research on the connections between finance and economic growth. Majority of studies view reserves as a component of monetary policy rather than a factor that directly influences growth. Furthermore, despite the preponderance of literature on the importance of high reserve requirements, there is little evidence from Ukraine on the effect of banak liquid reserve on the economy during the times of conflict. This leaves a glaring hole for additional research. This paper contributes to the literature by focussing on how bank liquid reserve combines with food export to drive the Ukraine' economy during the times of war. The following section presents the method and results.

Purpose, objectives and research methods. The objective of this paper is to analyse the impact of bank liquid reserve and food export on economic development during conflict. The purpose therefore is to evaluate the extent of combined effect bank liquidity and food export on economic growth of Ukraine. The paper applied a positivist paradigm, which is suitable for measuring the relationship between quantitative variables. Secondary data on bank liquid reserve, food export and GDP for Ukraine was collected from the countries' bank performance archives of the World Development Indicators. The paper applied a multiple regression technique for data analysis. Given the focus on bank liquid reserve and food export, it became apposite to include the two independent variables in the model to measure their impact on economic growth of Ukraine.

Accordingly, the general model equation used in the analysis is:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon \quad (1)$$

where: y = the dependent variable (GDP used as the proxy for economic growth in this paper), x_1 and x_2 = the independent variables (bank liquid reserve and food export respectively), β_0 = the y-intercept, β_1 and β_2 = the regression coefficients accounting for the change in y variable for every one-unit of change in the independent variables x_1 and x_2 correspondingly, and ε = representing the random error term, which represents unaccounted variables in this model.

Research results. Table 1 indicates that bank liquid reserve and food export does have a significant impact on Ukraine's economic performance during the war. This is visible at F-significance = 0.00049674. The individual independent variables performance is depicted by their probability values and regression coefficients. Bank liquid reserve is significant at P= 0.000495 with a positive regression coefficient of 122.3883. In addition, food export is significant at p = 0.006234 with a negative regression coefficient of -131.289. Overall, coefficient of correlation is high at 0.884089 showing a close correlation. In addition, coefficient of determination (R^2) is high at 0.781613 and the adjusted R^2 at 0.737936 which indicates a good model fit. The positive coefficient for bank liquid reserve indicates that bank liquid reserve has a positive and significant effect on supporting Ukraine's economy during the war, which implies that the capacity of banks to attract and retain more liquid reserve will help the Ukraine's economy to be resilient in the time of war.

To further authenticate the statistical significance established by the p-values, the t-statistic provides additional results from the data analysis. Accordingly, from Table 1, the t-statistic and standard error for each independent variable gives further predicting significance insight, which substantiates the influential power of the bank liquid reserve and food export on the GDP per capita of Ukraine. The bank liquid reserve indicates a standard error of approximately 24, which is relatively low, and hence resulting in a t-statistic of 5, which is greater than conventional absolute t-value threshold of 2 or 2.5 generally regarded as suggestive of highly significant relationship. Therefore, the t-value of 5, indicates that bank liquid reserve coefficient is up to 5 standard errors far away from zero – which is good enough. Also, with its positive sign, the t-statistic of 5 provides further evidence that bank liquid reserve has a significant and positive impact on the performance of Ukraine's GDP per capita. In comparison with the standard error of food export, the standard error of bank liquid reserve is higher, which thus offers a better precise estimation of the coefficient. The food export independent variable indicates a t-static of -3, which depicts that the food export coefficient is 3 standard errors far away from zero value, which is also fair enough although lower than the value for bank liquidity. The t-statistic value of -3 is also indicative of statistical significance of food export because it is also greater than the absolute t-statistic threshold of 2 or 2.5. however, unlike the t-statistic of bank liquid reserve, which has a positive sign, the t-statistic of food export with -3 has a negative sign which indicates a negative relationship within this period of conflict. This shows that increase in food export within this period has a negative effect on the GDP per capita. This is not surprising given the heavy costs incurred to export foods using a more expensive supply chain logistics, which may lead to export costs overshooting the revenue.

Furthermore, in concluding the results that the two independent variables (bank liquid reserve and food export) are both statistically significant within the conflict period in influencing the movement in the dependent variable (GDP per capita), the lower 95% and upper 95% confidence intervals provide additional insight to conclude the significant results. A look at Table 1 shows that the confidence intervals are between 68 and 176 for the lower 95% confidence level, and between -216 and -46 for the upper 95%. Given that none of these intervals contain zero, the result of statistical significance is further confirmed at both lower 95% and upper 95% confidence intervals.

Discussion. The negative regression coefficient for food export may not be perceived as a surprise. This can be explained by supply chain disruptions which emerged at the advent of the invasion of Ukraine which blocked logistics routes for exporting agricultural produce. The exports that passed through were made at higher costs given the alternative diversion routes that takes longer time and hence more financially expensive. In addition, prices plummeted given the pile-up of produce waiting for exports. The logistics setbacks also made the revenues from sales to fall below the production costs of producers. Overall, the quantity of food export and the attendant revenue declined due to limited supply chain routes (Countryman et al, 2025; Martyshev et al., 2023). The findings of this paper corroborate the previous research findings, which showed that liquidity creation has a relationship with economic growth (Almeshari et al., 20233).

The findings of this paper signals urgent need for various support which would enable the country to benefit from food export during the time of conflict. Such support would include increases in facilitating export supply chain route from neighbouring EU countries to increase the volume of exports which may thus improve revenue to producers and a boost to the country's GPD. The findings on the positive link between bank reserve and growth requires that adequate support – national and international should be accorded to the banks to assist them in retaining enough reserve to boost economic sustainability during the time of conflict.

Table 1. Summary Output of Regression Result: Dependent Variable is GDP Per Capita

Regression Statistics						
Multiple R	0.884089					
R Square(R^2)	0.781613					
Adjusted R^2	0.737936					
Standard Error	544.3146					
Observations	13					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	2	10603913	5301956	17.89519	0.00049674	
Residual	10	2962783	296278.3			
Total	12	13566696				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	6580.48	1145.523	5.744521	0.000187	4028.096437	9132.864
Bank L. reserve	122.3883	24.21004	5.05527	0.000495	68.44493675	176.3316
Food export	-131.289	38.06306	-3.44924	0.006234	-216.0983019	-46.4787

Conclusions. This paper joins contemporary research discussions tailored to banking and finance imperatives during war and specifically tailored to the role of bank liquid reserve in maintaining the economy of Ukraine during the war. The literature contains related empirical research but have rarely had direct examination of a joint effect of bank liquid reserve and food export on the economy of Ukraine. Hence the core objective of this paper from the onset was to examine the impact of bank liquid reserve and food export on economic development during conflict. The paper thus adds an important novelty to existing array of related discourse by fostering a new slant that amalgamates the impact of banking sector and agricultural sector vis-à-vis food export on the economy.

Although these two sectors belong to two different genres of the economy, but they are synergistic and cooperative and should offer a joint booster to every economy under normal circumstances. However, this paper has demonstrated how the two macroeconomic variables may divert during war. With data on Ukraine' food export, bank liquid reserve and economic development, the regression results indicate that both variables are highly significant on their effect on economic development with P-values way below one percent alpha value.

However, their direction of impact differs; whilst bank liquid reserve provides a positive effect on economy development during war, food export assumes the contrary, not because of lack of food production but chiefly because of obstructed export logistics, reduced export and high cost of export. Accordingly, the economy of Ukraine would retain resiliency with a sustained bank liquid reserve. The banks can assist the economy by utilizing various avenues for attracting, improving and retaining liquid reserve. Food export could support the economy of the nation with assistance from neighbours, the EU and international community in smoothing its food export logistics to enable more export of food through normal channels without incurring additional costs of diversion logistics, which erodes food export revenues to producers and the economy.

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Вплив ліквідних резервів банків та експорту харчових продуктів на економічний розвиток під час конфлікту

Анотація. Ліквідні резерви банків та виробництво харчових продуктів забезпечують життєво важливу підтримку для ефективної та продуктивної економічної діяльності. Мета цієї статті полягає в аналізі впливу ліквідних резервів банків та експорту харчових продуктів на економічний розвиток під час конфлікту, використовуючи дані України як приклад.

Постановка проблеми. Позиція ліквідності банків спричиняє компроміс між ефективністю кредитного ризику банків та прибутковістю банків. Таким чином, існує делікатний балансувальний акт між утриманням високої ліквідності за рахунок кредитування, стимулювання інвестицій та економічного зростання, прибутковості та виникнення кредитного ризику.

Мета статті. Мета цієї статті — оцінити, як комбінований вплив ліквідності банків та експорту харчових продуктів впливає на економічне зростання, ступінь зростання та напрямок зростання.

Нерозв'язані аспекти проблеми. Існує дефіцит літератури щодо спільного впливу ліквідності банків та експорту харчових продуктів на економічне зростання країни в стані конфлікту — особливо в контексті сучасного випадку України.

Основний матеріал. У статті застосовано кількісний підхід за допомогою моделі множинної регресії для дослідження взаємозв'язків. Вторинні дані щодо ліквідних резервів банків, експорту харчових продуктів та ВВП України зібрано з архівів даних економічних показників Світових індикаторів розвитку.

Висновки. Результати аналізу свідчать, що ліквідні резерви банків та експорт харчових продуктів мають значний вплив на економічні показники України під час війни. Загальна F-статистика є значущою при P=0,000496. Крім того, ліквідні резерви банків є значущими при P=0,000495 з позитивним коефіцієнтом регресії 122,3883. Додатково, експорт харчових продуктів є значущим при p=0,006234 з негативним коефіцієнтом регресії -131,289. Коефіцієнт кореляції моделі є високим — 0,884089, що свідчить про тісний зв'язок. Крім того, коефіцієнт детермінації (R^2) є високим — 0,781613, а скоригований R^2 — 0,737936, що вказує на добру пристосованість моделі. Позитивний коефіцієнт для ліквідних резервів банків свідчить про те, що ліквідні резерви банків мають позитивний і значущий вплив на економіку України під час війни, що означає, що здатність банків залучати більше ліквідних резервів надає значну допомогу для економічної стійкості України в часи конфлікту. Хоча експорт харчових продуктів є значущим, він має негативний коефіцієнт, що походить від перешкод у логістиці експорту під час конфлікту, оскільки альтернативні маршрути експорту коштують дорожче. Результати доповнюють літературу, вказуючи на те, що здоровий банківський сектор з достатніми ліквідними резервами є життєво важливим для підтримки економічної життєздатності та стійкості під час конфлікту.

Ключові слова: *ліквідність банків, резерви банків, експорт харчових продуктів, економічне зростання, кредитний ризик, інвестиції*

Класифікація JEL: G21; G28; O1; Q17

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