

THE INTRODUCTION OF THE EURO AND ITS IMPACT ON FIRM PERFORMANCE – THE EVIDENCE OF CROATIA

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Abstract

This study examines the impact of the introduction of the euro on firm performance of non-financial firms listed on the Croatian capital market. Croatia adopted the euro as its sole legal tender on January 1, 2023, becoming the 20th member of the euro area. While the macroeconomic effects of euro adoption have been widely studied, its microeconomic implications, particularly on firm performance, remain underexplored. This research fills this gap by analyzing firm-specific determinants and their performance before and after euro adoption over 2019-2023. Using a sample of 25 non-financial companies listed on the Zagreb Stock Exchange, we employ panel data estimation techniques to evaluate the influence of euro adoption on corporate performance, incorporating variables such as firm size, leverage, firm openness or international sales, liquidity, and euro dummy variable. The results reveal that introducing the euro had a significant positive impact on firm performance, with implications for investment strategies and international competitiveness. This study is the first to investigate the euro's effect on firm performance in Croatia, offering valuable insights for policymakers and contributing to the broader literature on currency adoption and firm dynamics.

JEL classification: L25, D53

Keywords: Euro Adoption, Firm Performance, Euro Area, Croatia, Stock Exchange

Received: 09.11.2024

Accepted: 14.11.2024

Cite this:

Kramarić, T.P. & Miletić, M. (2024). The introduction of the euro and its impact on firm performance - the evidence of Croatia. *Financial Internet Quarterly* 20(4), pp. 85-95.

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INTRODUCTION

The Republic of Croatia adopted the euro as a sole legal tender on 1 January 2023 and became the 20th member of the euro area. This is stipulated with the Decision on the adoption of the euro as the official currency in the Republic of Croatia (Official Gazette No 85/22) as well as with the Act on the adoption of the euro as the official currency in the Republic of Croatia (Official Gazette No 88/22).

Although Croatia entered the European Union (EU) on 1 July 2013, it joined the European Exchange Rate Mechanism (ERM II), which represents the first formal phase towards the adoption of the euro, only in 2020. In addition to meeting other economic and legal convergence criteria, in 2022 the Council of European Union approved the accession of Croatia to the Eurozone following a proposal by the European Commission and after consulting the European Parliament.

As Negri et al. (2021) put it, the introduction of a new currency significantly impacts the daily lives of all Europeans, influencing their transactions, purchases, and interactions. The potential positive effects of the introduction of the euro as an official currency have been repeatedly stated (e.g. Strategy for the Adoption of the Euro in the Republic of Croatia, 2019) including elimination of currency risk, decrease of interest rates and transaction costs, boost of investments, strengthening of international trade and consequently the resilience to economic and financial disturbances.

The impact of the introduction of the euro on the macroeconomic level has been largely investigated (Haber & Neck, 2005; Dubois et al., 2009; Caporale & Kontonikas, 2009; Peersman, 2011; Buongiorno, 2015). This is, however, not the case regarding its microeconomic effects, specifically in terms of firm performance, although, “the introduction of a common currency significantly improves the conditions for trade and other forms of economic transactions within the Eurozone and likely helped to proliferate them” (Negri et al., 2021).

There are numerous studies on the determinants of firm performance that refer to developed and developing countries, including Croatia. Many studies investigating the firm performance of Croatian companies focus on various aspects such as financial indicators, market competitiveness, and other firm-specific and industry-specific variables (Šarlija & Harc, 2016; Škuflić et al., 2018; Pervan et al., 2019; Dabić et al., 2019). One notable area that remains underexplored is the potential impact of Croatia's adoption of the euro currency. Most of these papers were written before Croatia joined the Eurozone on January 1, 2023, when the euro replaced the kuna, and therefore do not account for this significant monetary shift. Even some newer pa-

pers (Stanić et al., 2023; Korent & Orsag, 2023; Mijoč, 2024) cover the previous period leading up to the introduction of the euro, focusing primarily on pre-euro data, missing the opportunity to assess how this transition might influence factors like pricing strategies, international competitiveness, and transaction costs. The absence of analysis on the euro adoption leaves a gap in understanding how the new currency might affect Croatian firms' financial performance, export dynamics, and broader economic integration within the European market. This creates a need for updated research that examines the post-euro impact on local businesses and the national economy. Thus, the purpose of this research is to analyze the impact of Croatia's adoption of the euro on the performance of non-financial firms listed on the Croatian capital market. Specifically, the study aims to evaluate firm-specific determinants of performance, such as firm size, leverage, openness, liquidity, and the introduction of the euro, by comparing data before and after the euro adoption (2019-2023). The research seeks to fill the existing gap in the literature regarding the microeconomic effects of the euro adoption in Croatia, providing insights into how the new currency affects firm performance.

Our paper takes into account the adoption of the euro, which is rarely represented in the literature so far. Therefore, in this sense, only a few papers can be highlighted, such as those of Asimakopoulou et al. (2009) or McCarthy and Dolfsma (2015).

Specifically, Asimakopoulou et al. (2009) investigated profitability factors of 119 non-financial firms listed on the Athens Stock Exchange in the period 1995 – 2003 encompassing the period before joining the European Monetary Union (EMU) as well as the years when Greece physically replaced the drachma with the euro. Using panel data estimation techniques, the authors utilize firm-specific variables such as size, leverage, sales growth, investments, and current assets as well as dummy variables. Specifically, the EMU dummy variable takes the value 0 for the years before Greece joined the European monetary union, 1 otherwise whereas the Euro dummy variable takes the value 1 after the physical introduction of the Euro) and 0 otherwise. Their findings reveal that size, sales growth, and investment positively influence firm profitability expressed with ROA, i.e. pre-tax profit over total assets whereas leverage and current assets show a negative impact. Furthermore, participation in the European monetary union and the introduction of the euro have a negative effect on corporate performance.

McCarthy and Dolfsma (2015) investigated the impact of the introduction of the euro on firm decision-making, however, focusing on mergers and acquisitions (M&A). Specifically, they examine 19,362 intra-EU M&A

activities in the period 1990-2014 across 48 countries. The influence of the adoption of the euro is measured in terms of the number of M&As, their value, and spread taking into account the distance between the acquirer and the target as well as the distribution of these activities across the core and periphery, depending on the population density. After conducting standard regression analysis, the authors find that the euro has changed the EU M&A market leading not only to more deals but also to a bigger and geographically wider spread of activities.

Thus, this research contributes to the academic debate on whether the introduction of the euro as a currency is associated with enhanced firm performance. Specifically, this paper analyzes the pre-euro and post-euro periods to estimate the potential macroeconomic influence on firm performance. The scientific contribution of this paper lies in its focus on the determinants of firm performance, considering the potential effects of the euro's introduction. The analysis covers the 2019-2023 period, which includes both pre-euro and post-euro stages, allowing for the quantification of the macroeconomic impact on corporate performance. In addition to examining the influence of euro adoption on corporate performance, this paper employs a set of firm-specific variables, thereby enriching the existing literature. Furthermore, to the best of the authors' knowledge, this is the first study to examine the adoption of the euro and its impact on firm performance within the Croatian capital market.

The paper is structured as follows. After the introduction which offers context and significance of Croatia adopting the euro and identifies a gap in the literature on the microeconomic effects, particularly on firm performance, the methods section follows. It describes the estimated model as well as the variables used in the analysis and introduces the EURO dummy variable to distinguish pre- and post-euro periods. Accordingly, this section outlines the hypotheses and provides a review of previous research related to each specific hypothesis. It also explains the sample selection criteria and data sources, detailing the final sample composition. The section containing empirical analysis as well as the results follows afterward. A robustness check is conducted using alternative performance and firm size measures to validate the empirical results. The conclusion summarizes the findings, and their alignment with the authors' expectations, and discusses the implications for policy and future research.

METHODOLOGY AND DATA

This section presents the model estimating the influence of introduction of the euro on firm performance as well as the potential effect of several firm-specific factors.

Following Gabrijelcic et al. (2016), firm performance is measured with accounting performance measure such as earnings before interest and taxes i.e. net operating profit or EBIT scaled by total assets (EBIT/TA). Likewise, Goddard et al. (2005) also use this performance measure defining it as net profit before tax plus interest divided by total assets.

For the econometric data analysis, the authors utilized static balanced panel data analysis. Model (1) serves as the foundation for their estimation.

$$Y_{it} = c + \sum_{k=1}^K \beta_k X_{it}^k + \varepsilon_{it} \quad (1)$$

Where:

$$\varepsilon_{it} = z_i + u_{it}$$

Y_{it} is the performance of listed company i at time t , with $i = 1 \dots n$; $t = 1 \dots T$

X_{it} are k independent variables encompassing firm size, leverage, firm openness, liquidity, and euro dummy discussed below.

In this model, ε_{it} represents the disturbance term, where u_{it} is the unobserved specific effect, and is the idiosyncratic error. The model is a one-way error component regression model where:

$$z_i \sim IIN(0, \sigma_z^2) \text{ and independent of } u_{it} \sim IIN(0, \sigma_u^2)$$

Drawing on relevant literature, the authors suggest that firm performance is influenced by various factors, such as firm size (measured by total assets), leverage, openness, liquidity, and the EURO dummy.

H₁: The firm size impacts its performance.

An independent variable that is frequently applied in research of this type is the firm size. Following many authors such as Gabrijelcic et al. (2016); Işık (2017) as well as Nguyen and Nguyen (2020) etc., the approach used calculates this variable as the natural logarithm of total assets. As stated by Nguyen and Nguyen (2020), it is evident that larger firms always have more resources than their smaller counterparts, which allows for a higher production scale. Consequently, larger firms can expect a higher return rate. As pointed out by Cheong and Hoang (2021), large firms have an advantage because they benefit from economies of scale and lower equity costs, adding that this might be their disadvantage as well since such firms might not be able to swiftly adapt to the changing environment due to their complex structure. Thus, the predicted sign of this variable is also ambiguous.

H₂: There is a relationship between leverage and firm performance.

Leverage is introduced in the analysis as book value of total debt over total assets as in e.g. Asimakopoulos et al. (2009); Gabrijelcic et al. (2016) as well as Cheong & Hoang (2021). Although this variable is often used in

research, its impact on performance is not uniform. Inconsistent findings, thus, raise doubts about generalizing the results. Işık (2017) explains the potential negative effect of leverage with high-interest payment which diminishes profitability. Furthermore, Nguyen and Nguyen (2020) clarify this rationale with the fact that firms taking on more debt will incur higher interest expenses, leading to cash constraints from regular debt payments. This can result in financial difficulties and potentially a decline in operating performance. Alarussi and Alhaderi (2018) note that firms relying heavily on borrowing face higher risks, whereas those that use more equity are likely to operate more conservatively by depending on inner funds. However, the latter authors also add that the tax benefits of debt may dominate up to a certain debt ratio, ensuing in higher profitability. Thus, the potential effect of this variable is unclear.

H₃: Firm openness is an important determinant of the firm performance.

A further variable that the authors have employed in their analysis is firm openness which is calculated as a percentage of sales obtained abroad over total sales. Specifically, it refers to the extent to which a firm's sales revenue is generated from international markets compared to its domestic market. Reflecting a firm's global market orientation, the share of international net sales is also employed by e.g. Gabrijelcic et al. (2016), and Burger et al. (2017). Although Gabrijelcic et al. (2016) do not find a significant impact of firm openness on its performance, we expect that firms that are significantly engaged in international markets rather than being domestically focused can experience benefits in terms of generating revenues from diverse geographic regions, contributing to its overall growth, risk management, and competitive positioning. Burger et al. (2017), who find exporters to be more resilient to cyclical shocks, conclude that firms that focus on exports tend to be more productive and generally more successful than those that concentrate on the local market.

H₄: The firm performance is affected by liquidity.

Liquidity is presented with the quick ratio measuring a company's ability to meet its short-term liabilities using its most liquid assets. Since it excludes inventories from current or short-term assets, a higher quick ratio indicates a greater ability to cover short-term liabilities without relying on the sale of inventories. Sala-Ríos (2024) debates the optimal level of liquidity saying that liquid firms face less risk and lower financing costs because they can easily convert assets into cash to meet their liabilities. Besides Sala-Ríos (2024), Nguyen and Nguyen (2020) also document the positive effect of liquidity on ROA and ROE whereas it has a negative effect on ROS. Moreover, Işık (2017) finds liquidity to

be positive and significant only in big firm samples, whereas in other models it has no statistical significance. Sala-Ríos (2024), explaining the potential negative impact of liquidity on profitability, states that an excess of liquidity implies accumulation of idle funds and foregoing future investment opportunities, while a shortage can impact the firm's solvency and production capacity. Furthermore, Alarussi and Gao (2023) add that a negative effect of liquidity could be expected since companies might experience reduced profits due to inefficient utilization of liquid assets.

H₅: There is a positive impact of the introduction of the euro on firm performance.

Since the authors aim to examine whether the introduction of the euro alters the firm performance, the introduction of the euro is operationalised through a dummy variable. Specifically, the EURO dummy variable is introduced in order to distinguish between the pre and post-euro periods. The dummy variable takes value 1 in the year following the accession to the Eurozone, i. e. in 2023, and equals to zero before the currency changeover. Similarly, Petroulas (2007), Alesina et al. (2008), Gonçalves et al. (2009) and Asimakopoulou et al. (2009) also apply this approach while examining the different aspects of the adoption of the euro. Given that the introduction of the euro implies numerous positive effects such as it increases foreign direct investments (Petroulas, 2007), deregulation of the product and labour market (Alesina et al., 2008), and facilitates trade flows (Baldwin et al., 2008; Gunnella et al., 2021), etc., the authors expect that this will consequently have positive effects on company performance.

The sample used in the analysis is balanced since the coverage of firms' financial information remains stable continuously over the sample period. This variation is primarily due to the fact that some firms were listed after the start of the analysis period in 2019, while others exited the market during this time.) The authors' intention primarily was to cover all firms listed on the Zagreb Stock Exchange including the prime, official, and regular markets. The primary requirement for a firm to be included in the sample is that it must be listed for at least three consecutive years. Moreover, the authors have omitted firms engaged in the financial sector (e.g. Asimakopoulou et al., 2009) as well as those firms that have reported negative equity Işık (2017). Furthermore, the firms that do not provide coverage of information on their revenues generated abroad were also excluded from the analysis. Therefore, the final sample comprises of 25 companies (23 companies operating in the entire five-year period and two companies operating in a four-year period) yielding 123 annual observations. The firms included in the analysis represent 55% of the market share among all companies listed on the stock exchange that meet the aforementioned requirements.

Publicly available audited and unconsolidated financial statements published on the websites of the Zagreb Stock Exchange were used as data sources for

calculating the applied variables ensuring in that way the reliability and accuracy of data.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
EBIT/TA	123	4.23	5.756	-10.950	22.458
EBITDA/TA	123	7.81	6.076	-6.807	26.343
Size_assets	123	18.35	1.330	16.299	21.909
Size_emp	123	6.20	1.265	1.946	8.210
Leverage	123	39.40	20.098	2.668	93.769
Firm_openness	123	46.60	30.214	0.000	98.903
Liquidity	123	2.30	2.436	0.210	16.662
Euro_dummy	123	0.20	0.398	0.000	1.000

Source: Author's own work.

The descriptive statistics presented in Table 1 provide an overview of the central tendencies, dispersion as well as range for the variables used in the research, based on 123 observations for each variable. The mean of firm profitability expressed with EBIT/TA is 4.23, with a standard deviation of 5.756, indicating some variability around the average. The firm's size, measured on the basis total assets, has a mean of 18.35 and a relatively small standard deviation of 1.330, suggesting consistency in firm sizes. Variables leverage and firm openness show higher variability, with standard deviations of 20.098 and 30.214, respectively.

The next step in the research involved examining the issue of multicollinearity among the independent variables. To assess this, a matrix of Pearson correlation coefficients was used. Multicollinearity can distort the results of regression analysis by inflating the variance of the estimated coefficients, making them unstable and difficult to interpret. The absence of multicollinearity among the variables used in the research is evident from Table 2, as the Pearson correlation coefficients are well below the threshold of 0.7, indicating that there is no strong correlation between the independent variables.

Table 2: Correlation Matrix

	EBIT/TA	Size_assets	Size_emp	Leverage	Firm_openness	Liquidity	Euro_dummy
EBIT/TA	1.0000						
Size_assets	0.0060	1.0000					
Size_emp	0.0756	0.6795*	1.0000				
Leverage	-0.2577*	-0.2953*	-0.0292	1.0000			
Firm_openness	0.1376	0.2440*	0.3589*	0.0036	1.0000		
Liquidity	0.1524*	0.1592*	-0.1878*	-0.5418*	0.0506*	1.0000	
Euro_dummy	0.1241	0.0455	-0.0007	-0.0435	0.0028	0.0550	1.0000

* p < 10%

Source: Author's own work.

Variance Inflation Factors (VIF) were used to validate the results of the correlation matrix for independent variables. The VIF values are detailed in Table 3. A VIF greater than 5 typically indicates a strong correlation between independent variables, suggesting

potential multicollinearity. However, as shown in Table 3, all VIF values are below this threshold, indicating no significant issues with multicollinearity among the independent variables. This confirms the reliability of the correlation matrix results.

Table 3: Variance Inflation Factors for Independent Variables (VIF)

Variable	VIF	1/VIF
Size_emp	2.4600	0.406981
Size_assets	2.3100	0.433237

Variable	VIF	1/VIF
Leverage	1.5300	0.654481
Firm openness	1.1800	0.846096
Liquidity	1.6500	0.606720
Euro_dummy	1.0100	0.994899
Mean VIF	1.6900	

Source: Author's own work.

To determine the most appropriate panel model, the F test, Lagrangian Multiplier test for random effects, as well as Hausman test were conducted. These tests helped identify whether a fixed effects or random effects model was more suitable. To address the potential issue of heteroscedasticity, the Breusch-Pagan test was employed. Heteroscedasticity can lead to biased test statistics and inaccurate confidence intervals, making it essential to correct for this issue. The results of

these tests, summarized in Table 4, indicate that the random effects (RE) model was the most appropriate for this analysis. However, the Breusch-Pagan test confirmed the presence of heteroscedasticity. Consequently, after selecting the appropriate static panel model, robust standard errors were applied to ensure the reliability of the results. These steps were also repeated for a robustness check, confirming the validity of the findings.

Table 4: Parameter Estimates of Static Panel Model with Random Effects (RE)

Variables	EBIT/TA
Size_assets	-0.5374184 (0.5414105)
Leverage	-0.0929743** (0.0381337)
Firm_openness	-0.0344501 (0.0265757)
Liquidity	-0.0411969 (0.1500937)
Euro_dummy	1.5668000* (0.9227528)
cons	15.9341000 (10.9683800)
R2 within	0.0555000
R2 between	0.1913000
R2 overall	0.1113000
Model p value	0.0551000
Lagrangian multiplier test for random effects	chi = 23.9700000 p value = 0.0000000
Hausman test	chi = 0.6800000 p value = 0.9841000
Breusch-Pagan test for heteroskedasticity	chi2 = 4.8000000 p value = 0.0285000
F test	p value = 0.0000000

*, **, *** Statistically significant at the; 10%, 5%, 1% level respectively. Robust standard errors are between parentheses

Source: Author's own work.

The results of the analysis, presented with Table 4, reveal that introduction of the euro is a key factor in determining corporate performance as well as leverage. However, firm size, firm openness and liquidity do not have a statistically significant role in predicting corporate performance.

Leverage is found to be a significant predictor of firm performance while its negative impact parallels the findings of Asimakopoulos et al. (2009); Gabrijelcic et al. (2016); Işık (2017), Alarussi and Alhaderi (2018); Cheong and Hoang (2021) to name a few. The reasoning for such findings is offered by Cheong and Hoang

(2021) who state that the financial burden deters companies from investing in new projects, hence losing the prospects for growth. Moreover, Alarussi and Alhaderi (2018) add that this means that the costs of financing from external sources are rather high affecting the profitability of the company. Furthermore, Asimakopoulou et al. (2009) note that higher debt requires more resources by the firm for their repayment, reducing the funds available for investment.

As expected, introduction of the euro has a positive impact on firm performance. Van Dijk et al. (2005) state that “the elimination of exchange rate risk and the corresponding exchange rate premium provides more incentives to households and firms to diversify their investment portfolios” adding that it provides “more certainty to manufacturing and exporting firms on imported material costs and on export revenues”. This might foster production and trade as well as overall performance. Furthermore, integration with other EU countries which is additionally fostered with the introduction of the euro can boost productivity by increasing the degree of competition, forcing producers to operate in a more efficient and innovative way, facilitating also the flow of ideas and managerial know how to domestic firms (Asimakopoulou et al., 2009). However, Asimakopoulou et al. (2009) document that the introduction of the euro had a negative impact on the profitability of Greek firms. They attributed this to the companies' inefficiency in capitalizing on the opportunities presented by joining the European Monetary Union. Additionally, the swift decline in competitiveness may have also adversely affected firm profitability.

ROBUSTNESS CHECK

In order to validate and substantiate the obtained empirical results, the authors performed a robustness check. For this purpose, the model with different measure of performance is estimated. Specifically, earnings before interests, taxes, depreciation, and amortization, i.e. EBITDA scaled with total assets is used as a dependent variable where EBITDA is calculated as EBIT plus depreciation. Furthermore, we test whether our baseline results are robust to an alternative measure of firm size. Thus, we use a natural logarithm of the number of employees as a proxy for firm size as suggested by Gabrijelcic et al. (2016). Moreover, it is worth noting that Sorić (2024) seeks to clarify the issue of euro-induced inflation during Croatia's transition to the euro finding no clear or robust evidence of such an effect at

the aggregate level. However, contrasting all previous euro area expansions in the last two decades of the countries with similar economic background as Croatia, Croatia's transition to the euro took place under conditions of intense inflationary pressures (Sorić, 2024). For instance, according to the data from the International Monetary Fund in the year preceding their entry into the Eurozone, inflation in Slovenia in 2006 stood at 2.5%, in Slovakia in 2008 at 3.9%, in Estonia in 2010 at 2.7%, in Latvia in 2013 at 0%, and in Lithuania in 2014 at 0.2%. In contrast, Croatia experienced a significantly higher inflation rate of 10.8% in the year leading up to its adoption of the euro. Taking into account the fact that Croatia adopted the euro during a period of high inflation, both in Croatia and in the EU, it might be beneficial to see how underlying inflation impacts the results, providing a clearer understanding of the euro's effect on firm performance in the context of inflationary pressures. For this purpose, average annual inflation rates collected from the Croatian Bureau of Statistics were used in the robustness check as well. A review of the existing literature reveals that the findings of studies examining inflation as a potential determinant of corporate profitability are inconsistent. Cheong and Hoang (2021) suggest that rising inflation rates reduce aggregate demand while increasing operational and borrowing costs, ultimately leading to a decline in corporate earnings. Odusanya et al. (2018) add that the rise of inflation rates drives up production costs and ultimately reduces firms' profit margins. On the contrary, Perry (1992) argues that in the situation of anticipated inflation, firms can adjust their prices to a level that secures higher revenues and can implement effective cost management strategies, ensuring that operating costs remain below revenues, thereby increasing profits. The findings of Cheong and Hoang (2021) present mixed results across different models. Pervan et al. (2019) document its positive effect, while Isayas (2022) finds inflation to be an insignificant determinant of profitability as well as Bhutta and Hasan (2013). Furthermore, Odusanya et al. (2018) find a negative effect of inflation on firm performance.

The authors find robust evidence in support of the baseline hypothesis. Specifically, leverage remained a significant variable negatively influencing corporate performance while the euro dummy continues to have a favorable impact on performance. New independent variables introduced while checking the robustness such as size based on employees as well as inflation are not found to be statistically significant.

Table 5: Robustness Check

Variables	EBITDA/TA
Size_emp	0.7013727 (0.6955464)
Leverage	-0.0793630** (0.0369652)
Firm_openness	0.0216128 (0.0312788)
Liquidity	0.0138053 (0.1387801)
Euro_dummy	2.0151570* (1.0342860)
Inflation	-0.0405980 (4.6285130)
cons	5.3330810 (4.6285130)
R2 within	0.0668000
R2 between	0.1552000
R2 overall	0.1028000
Model p value	0.0283000
Lagrangian multiplier test for random effects	chi = 30.9500000
	p value = 0.0000000
Hausman test	chi = 1.3800000
	p value = 0.9669000
Breusch-Pagan test for heteroskedasticity	chi2 = 3.3100000
	p value = 0.0688000
F test	p value = 0.0000000

*, **, *** Statistically significant at the; 10%. 5%. 1% level, respectively. Robust standard errors are between parentheses

Source: Author's own work.

CONCLUSION

This study aims to reveal the implications of Croatia's adoption of the euro, focusing specifically on its impact on firm performance within the Croatian capital market. By analyzing a sample of 25 non-financial companies listed on the Zagreb Stock Exchange over the period from 2019 to 2023, the authors provide empirical evidence on how the transition to the euro has influenced corporate performance.

Supporting the authors' expectations, the findings indicate that the introduction of the euro has a significant and positive impact on firm performance. This aligns with the expected outcomes of currency adoption, such as the elimination of exchange rate risk, reduction of transaction costs, and potential for increased investment and international trade. The positive influence of the euro dummy variable underscores the enhanced performance and competitiveness of Croatian firms in the post-euro period. Regarding firm-specific factors, leverage also plays a crucial role in determining performance. Specifically, leverage has a negative impact on firm performance, suggesting that

high debt levels constrain investment and growth opportunities. Conversely, firm size, firm openness measured by international sales, and liquidity are not found to be significant predictors of corporate performance.

The robustness check, utilizing alternative performance and firm size measures, together with an inflation variable reinforces the reliability of our results. The positive impact of the euro adoption on firm performance remains consistent, further validating our findings.

In conclusion, this research contributes to the understanding of currency adoption's microeconomic effects by providing novel insights into the Croatian context. The significant positive impact of the euro on firm performance has implications for policymakers and investors, suggesting that euro adoption can enhance corporate competitiveness and drive economic growth.

Some specific policy recommendations based on the findings might include the need to manage leverage responsibly which could be done through fiscal policies that incentivize the use of equity financing or to pro-

promote the development of domestic capital markets to reduce reliance on debt. The positive impact of the euro on firm performance suggests that further integration into the European economy can be beneficial. Policymakers should leverage this opportunity by fostering innovation and encouraging foreign direct investment. As firm size was not found to be a significant predictor of performance, policies should aim to provide support across the board, ensuring that both large enterprises and small and medium-sized enterprises benefit from the euro adoption. Inflation's potential impact on firm performance should not be overlooked.

As Croatia adjusts to the euro, it is important to ensure that inflation remains under control to prevent adverse effects on corporate profitability. Furthermore, since this study primarily focuses on the short-term impacts of euro adoption, long-term monitoring should be established to understand the evolving dynamics across different sectors.

Future research could explore long-term effects and sector-specific impacts, offering a more comprehensive view of the euro's role in shaping firm dynamics.

REFERENCES

- Alarussi, A.S. & Alhaderi, S.M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*, 45(3), 442-458.
- Alarussi, A.S. & Gao, X. (2023). Determinants of profitability in Chinese companies. *International Journal of Emerging Markets*, 18(10), 4232-4251.
- Alesina, A., Ardagna, S. & Galasso, V. (2008). The euro and structural reforms. Working paper no. 14479, National Bureau of Economic Research, Cambridge.
- Asimakopoulous, I., Samitas, A. & Papadogonas, T. (2009). Firm-specific and economy wide determinants of firm profitability: Greek evidence using panel data. *Managerial Finance*, 35(11), 930-939.
- Baldwin, R.E., Di Nino, V., Fontagné, L.G., De Santis, R.A. & Taglioni, D. (2008). Study on the impact of the euro on trade and foreign direct investment. Working Paper, 321, European Economic and Monetary Union, Maastricht.
- Bhutta, N.T. & Hasan, A. (2013). Impact of firm specific factors on profitability of firms in food sector. *Open Journal of Accounting*, 2(2), 19-25.
- Buongiorno, J. (2015). Monetary union and forest products trade—the case of the euro. *Journal of Forest Economics*, 21(4), 238-249.
- Burger, A., Damijan, J.P., Kostevc, Č. & Rojec, M. (2017). Determinants of firm performance and growth during economic recession: The case of Central and Eastern European countries. *Economic Systems*, 41(4), 569-590.
- Caporale, G.M. & Kontonikas, A. (2009). The Euro and inflation uncertainty in the European Monetary Union. *Journal of International Money and Finance*, 28(6), 954-971.
- Chadha, S. & Sharma, A.K. (2015). Capital structure and firm performance: Empirical evidence from India. *Vision*, 19(4), 295-302.
- Cheong, C. & Hoang, H. V. (2021). Macroeconomic factors or firm-specific factors? An examination of the impact on corporate profitability before, during and after the global financial crisis. *Cogent Economics & Finance*, 9(1), 1-24.
- Dabić, M., Lažnjak, J., Smallbone, D. & Švarc, J. (2019). Intellectual capital, organisational climate, innovation culture, and SME performance: Evidence from Croatia. *Journal of Small Business and Enterprise Development*, 26(4), 522-544.
- Dubois, E., Hericourt, J. & Mignon, V. (2009). What if the euro had never been launched? A counterfactual analysis of the macroeconomic impact of euro membership. *Economics Bulletin*, 29(3), 2241-2255.
- Gabrijelcic, M., Herman, U. & Lenarcic, A. (2016). Firm performance and (foreign) debt financing before and during the crisis: evidence from firm-level data. *European Stability Mechanism, Working Paper Series 15*, 1-41.

- Goddard, J., Tavakoli, M. & Wilson, J.O. (2005). Determinants of profitability in European manufacturing and services: evidence from a dynamic panel model. *Applied Financial Economics*, 15(18), 1269-1282.
- Gonçalves, C.E.S., Rodrigues, M. & Soares, T. (2009). Correlation of business cycles in the euro zone. *Economics Letters*, 102(1), 56-58.
- Government of the Republic of Croatia & The Croatian National Bank. (2019). Strategy for the Adoption of the Euro in the Republic of Croatia, <https://euro.hr/wp-content/uploads/2022/07/Strategy-for-the-Adoption-of-the-Euro-in-the-Republic-of-Croatia.pdf> (Accessed: 24.04.2024).
- Gunnella, V., Lebastard, L., López-García, P., Serafini, R. & Mattioli, A.Z. (2021). The impact of the euro on trade: Two decades into monetary union. *ECB Occasional Paper*, 2021(283), 1-59.
- Haber, G. & Neck, R. (2005). Shall the new EU members introduce the euro? Some macroeconomic policy effects. *Atlantic Economic Journal*, 33, 139-149.
- International Monetary Fund. (2024). Inflation rate, average consumer prices annual percent change, <https://www.imf.org/external/datamapper/PCPIPCH@WEO/EEQ/BLR/BGR/CZE/HUN/POL/SVK/ROU/UKR/MDA/SVN/LVA/LTU> (Accessed 24.10.2024).
- Isayas, Y.N. (2022). Determinants of banks' profitability: Empirical evidence from banks in Ethiopia. *Cogent Economics & Finance*, 10(1), 1-15.
- Işık, Ö. (2017). Determinants of profitability: Evidence from real sector firms listed in Borsa Istanbul. *Business and Economics Research Journal*, 8(4), 689-698.
- Kodongo, O., Mokoaleli-Mokoteli, T. & Maina, L.N. (2015). Capital structure, profitability and firm value: panel evidence of listed firms in Kenya. *African Finance Journal*, 17(1), 1-20.
- Korent, D. & Orsag, S. (2022). Determinants of working capital management of firms in selected industries in Croatia. *Management: Journal of Contemporary Management Issues*, 27(2), 129-152.
- McCarthy, K.J. & Dolfsma, W. (2015). The Euro and its impact on the number, size, performance and regional spread of European mergers and acquisitions. *Regional Studies*, 49(8), 1407-1422.
- Mijoč, I. (2024). Determinants of profitability of the IT industry in Croatia. *Ekonomski Vjesnik/Econviews-Review of Contemporary Business, Entrepreneurship and Economic Issues*, 37(1), 45-62.
- Negri, F., Nicoli, F. & Kuhn, T. (2021). Common currency, common identity? The impact of the Euro introduction on European identity. *European Union Politics*, 22(1), 114-132.
- Nguyen, T.N.L. & Nguyen, V.C. (2020). The determinants of profitability in listed enterprises: A study from Vietnamese stock exchange. *Journal of Asian Finance, Economics and Business*, 7(1), 47-58.
- Oduşanya, I.A., Yinusa, O.G. & Ilo, B.M. (2018). Determinants of firm profitability in Nigeria: Evidence from dynamic panel models. *SPOUDAI-Journal of Economics and Business*, 68(1), 43-58.
- Official Gazette No 85/22. (2023). Decision on the adoption of the euro as the official currency in the Republic of Croatia.
- Official Gazette No 88/22. (2023). Act on the adoption of the euro as the official currency in the Republic of Croatia.
- Peersman, G. (2011). Macroeconomic effects of unconventional monetary policy in the euro area, European Central Bank, Frankfurt am Main.
- Pervan, M., Pervan, I. & Ćurak, M. (2019). Determinants of firm profitability in the Croatian manufacturing industry: evidence from dynamic panel analysis. *Economic Research-Ekonomska Istraživanja*, 32(1), 968-981.
- Petroulas, P. (2007). The effect of the euro on foreign direct investment. *European Economic Review*, 51(6), 1468-1491.

- Sala-Ríos, M. (2024). What are the determinants affecting cooperatives' profitability? Evidence from Spain. *Annals of Public and Cooperative Economics*, 95(1), 85-111.
- Stanić, M., Cita, M. & Šulentić, M.S. (2023). The Influence of Working Capital Management on the Profitability of Manufacturing Enterprises-The Case of Croatia. *South East European Journal of Economics and Business*, 18(2), 126-139.
- Šarlija, N. & Harc, M. (2016). Capital Structure Determinants of Small and Medium Enterprises in Croatia. *Managing Global Transitions: International Research Journal*, 14(3), 1-16.
- Škufljić, L., Mlinarić, D. & Družić, M. (2018). Determinants of construction sector profitability in Croatia. *Zbornik Radova Ekonomski Fakultet u Rijeka*, 36(1), 335-352.
- Van Dijk, D., Munandar, H. & Hafner, C.M. (2005). The euro introduction and non-euro currencies (No. 05-044/4). Tinbergen Institute Discussion Paper.