



Measuring the impact of financial cycles on family firms: how to prepare for crisis?

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Abstract

Financial cycles have sizeable economic effects, as witnessed during the 2008 financial crisis. However, despite the topic's research importance, there is limited literature on how financial cycles and financial crises affect individual family firms. To the best of our knowledge, our study is among the first to measure the impact of financial cycles and crises on family firms. To study the impact of financial cycles on family firms, we use the Amadeus database on European companies. We identify family firms following the Global Family Business Index methodology 2019 (EY and the Center for Family Business of the University of St. Gallen). To measure the impact of financial cycles, we use the credit-to-GDP gap indicator from the Bank for International Settlements. Using the credit-to-GDP gap as a proxy for financial cycles, we use panel structural vector autoregression (Abrigo and Love 2016), Wald tests of Granger causality (Granger 1969), and impulse response functions (Lütkepohl 2010; Lütkepohl et al. 2015). We prove that family firms are less vulnerable than non-family firms to financial cycles during both financial booms and busts. Family firms perform better when financial cycle shocks have a less pronounced impact on firms' performance. Non-family firms are highly vulnerable to financial cycles, performing worse during both booms and busts. The adoption of family firm management and governance policies should improve non-family firms' performance and help the economy recover rapidly in times of crisis (exogenous shocks). Our study is the first to explore the impact of financial cycles on the micro level with a focus on family firms. The results could help managers and practitioners better form their business policy by looking at family firms' experiences. Targeting economic policy more towards family firms in good and bad times will allow policymakers to prepare for future economic crises.

Keywords Financial cycles · Crisis · Family firms · Panel structural vector autoregression

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Introduction

Research on crises and external shocks, as opposed to financial cycles, has a long history. Past crises are both national and global and of short and long duration and are characterized by heterogeneity and different consequences. Unexpected episodes in the economy, such as crises, affect family firms in different magnitudes, and they respond differently. However, the number of studies on the impact of crises on family businesses is increasing but still limited. Previous studies show that family firms might behave differently from non-family firms, especially in times of crisis.

Family firms have had a significant economic presence throughout history, and in many countries, they are considered a significant economic force. Therefore, they have received attention from academics, policymakers, and practitioners, especially with regard to understanding contextual forces that contribute to family firm heterogeneity. The results of the studies in the literature indicate that companies and non-family businesses are inherently different. This diversity is visible on many levels, and the level of diversity is different depending on the size of the company and the industry represented. We use a sample of European companies to achieve a robust sample with a limited possibility of bias due to economic structure differences and financial cycle variability between countries.

On the other hand, Bauweraerts and Colot (2013) stated that according to Belgian large family firms versus nonfamily firms functioning in times of crisis, family firms develop idiosyncrasies that make them more resilient than nonfamily firms. This finding confirms the notion that absorption capacity results in a higher level of self-financing, thus making them more resistant to financial shocks occurring in the company. Furthermore, family businesses show higher investment rates in periods of crisis and implement stricter cost-cutting policies, which translates into improved operating performance.

An example is a general statement that family businesses contribute to economic growth (Morck and Yeung 2003) and that family business domination can limit economic growth. (Arrondo-Garcia et al. 2016) investigated how the global financial crisis affected the performance of family firms as well as their growth and risk-taking according to generation in control. They analysed private, unlisted, and large Spanish firms (6, 315) over the 2006–2010 period. The empirical findings proved that during this crisis period, first-generation family firms grew more and increased their level of debt more than multi-generational family firms.

The hypothesis we test is that family firms adjust quickly to new environments and have fewer bad governance problems than non-family firms (Berrone et al. 2010), (Miller et al. 2013), (Yildirim-Öktem and Üsdiken 2010) and perform better in financial cycles and financial crises. The results of Wald tests of Granger causality for family firms provide empirical evidence to support this claim.

Our study shows that the governance and characteristics of family firms are essential drivers of business performance. Motivational drivers and stronger corporate governance policies to protect shareholder and stakeholder interests make family companies less vulnerable to exogenous financial shocks in financial cycles. Family firms are as vulnerable to shocks in financial cycles as non-family firms are, but their adaptability and resilience make them more resilient to adverse shocks. Family firms do not perform better during financial busts but also outperform non-family firms during financial

cycle boom periods. The business strategy, consumer attention, and perception of future market conditions represent better governance in both good and bad times. Our study suggests that managers should be more driven and educated in good practices to keep pace with the pressures of (more pronounced and more frequent) financial cycles. This study's results provide clear empirical evidence of the competitive advantage firms could gain as a result of implementing acceptable governance practices in family firms.

The remainder of the paper is structured as follows: first, we present a review of the literature on the theory, characteristics, and performance of family firms in times of financial crisis. Next, we examine the data sources, variables and methods that we use in the study. Then, the results are discussed, drawing attention to the most prominent results and implications of the impact of financial cycles on family firms. The article concludes with a summary of the findings and implications for policymakers and practitioners, with guidelines for future research.

Literature review

Academic literature includes definitions of family businesses including both single and multiple criteria, although there is no consensus on the correct definition due to the multi-disciplinary, complex nature of the subject matter and the relatively brief history of related research.

According to (Miller et al. 2007), family firms are the organization type with the longest life expectancy worldwide. According to the multi-criteria definition of (Smyrniotis et al. 1997), at least one of the following criteria must be met for a firm to be considered a family business: a single-family holds more than 50% of ownership; more than one family holds more than 50% of ownership; a single-family group effectively controls the business; and a majority of senior management is drawn from the same family.

Zhou et al. (2017) highlighted four types of family firms: founder firms, heir firms, family-owning firms, and leader/owner firms. A critical aspect of researchers' interest in the context of family businesses is whether the family firm is a more efficient organizational form and therefore that family firms have better financial conditions than other firms. In terms of financial conditions, recent papers have also analysed corporate financial decisions. Unfortunately, although there are many studies on this aspect, the results are not conclusive (Chrisman et al. 2009).

Moreover, recent studies confirm that performance assessment is sensitive to the definition of family firms (Lee et al. 2017). In terms of the financial condition of family firms, their performance in times of uncertainty, economic downturn, crisis, or recession seems essential. The focal questions in this study are whether family businesses fare better under challenging times than non-family businesses and whether they retain stability and recover more quickly (Cicea et al. 2019).

(Lengnick-Hall et al. 2009) wrote that "strategic agility and resilience capacity enable firms to prepare for changing conditions, restore their vitality after traumatic jolts, and become even more proficient due to the experience." Are these capacities connected more strongly to family businesses than to non-family businesses?

First, crisis affects both family and non-family firms; however, in the case of family firms' owners, the crisis hits twice, first impacting consumers and then affecting the business owner (Runyan 2006). At the same time, crisis offers changes, opportunities and challenges.

Kraus et al. (2020) drew attention to the specific characteristics of family businesses in relation to crisis, particularly their behaviour and decisions. For example, family businesses have a heritage and are extremely effective in managing crises, as their social and emotional capital is at stake (Berrone et al. 2010). According to Miller and Le Breton-Miller (2006), family businesses are likely to attach more importance to continuity than non-family businesses. On the other hand, (Khanin et al. 2020) found that non-family CEOs moderately outperform family CEOs in “monitoring or performance appraisal and improvement”. In addition, Kraus et al. (2020) highlighted that with family ownership, the probability that companies follow formal crisis procedures is reduced (Faghfour et al. 2015), and family businesses sacrifice short-term results and shareholder value for long-term survival (Lins et al. 2013).

This finding, in turn, highlights the problem of the lack of a quick and effective response to recurring problems to eliminate negative outcomes and to eliminate occasional and non-systematic actions (Ellington et al. 1996). These findings may be combined other findings indicating that family firms are less entrepreneurially oriented than nonfamily firms, although this gap closes with the increasing technological intensity of the sector (Garcés-Galdeano et al. 2016).

A comparative analysis of financial conditions between family and non-family firms was performed by (Amann and Jaussaud 2012). The sample consists of 1271 companies and 416 family businesses in Japan for all three years (1998, 2003 and 2007), and the authors measured these firms' ability to recover during the Asian crisis. The research findings confirm that family businesses achieved stronger resilience both during and after the economic crisis, recovered better and continued to exhibit higher performance over time than non-family businesses. They also show stronger financial structures with better liquidity levels. These authors also highlighted that research in Japan confirmed their conclusion (Allouche et al. 2008).

Regarding the above results, (Zhou et al. 2017), using data on non-financial S&P 500 firms in the US from 2006 to 2010, verified that family firms outperform non-family firms during a crisis. They also highlighted the role of founders in family firms, suggesting that during the crisis period, founders enable functioning with more financial resources and conservative, prudent investment strategies due to these firms' lower ability to over-invest in risky projects.

By setting the same research goal, (Minichilli et al. 2016) analysed Italian listed companies, 288 family firms, and non-family firms during the 2002–2012 period (long period). The authors found frequent evidence that family-controlled firms perform better than non-family-controlled firms in crisis periods and were more prone to absorb exogenous shock. Research has also shown that the advantages of family businesses are highlighted when property risks are threatened.

Research with similar aims and findings was carried out by van Essen et al. (2015). Employing a substantial firm-level dataset of 2949 firms across 27 European countries, they confirmed that family firms outperform non-family firms during the crisis period. Moreover, according to two decisions, downsizing and wage decreases, they confirmed that family firms are less likely to make decisions in this regard in both pre-crisis and crisis periods.

Slightly opposite results were obtained by (Lins et al. 2013), who investigated whether and how family control affects valuation and corporate decisions during the 2008–2009 financial crisis by employing data for the period from mid-August 2008 to mid-March 2009 from 35 countries. The results showed that family firms generated the worst financial performance. Additionally, they reduced investment more relative to other firms vis-à-vis non-family firms during the global financial crisis. They also confirmed that outside investors incrementally discount family firms during a crisis, and the cost of family control outweighs its benefits.

(Attig et al. 2016) investigated the corporate investment decisions of 923 family firms from nine East Asian economies (Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand) over 2006–2010, investigating, among other factors, how family firms employ the resources they do not distribute to shareholders in times of crisis. The obtained results indicate a lack of synchronization with the anticipated prudential behaviour, showing that alongside increasing the level of profitability, family firms reduce the level of cash holdings and cut investment expenditures.

Nevertheless, (Arrondo-García et al. 2016) investigated not only whether and how the global financial crisis affected the performance of family firms but also these firms' growth and risk-taking according to the generation of the family in control. They analysed private, unlisted, and large Spanish firms (6, 315) over the 2006–2010 period. The empirical findings proved that during this crisis period, first-generation family firms grew more and increased their level of debt more than multi-generational family firms.

According to financial conditions, another analysed aspect is real earnings management (REM). (Eng et al. 2019) investigated how U.S. and Chinese family and non-family firms manage earnings over the 2004–2014 period. The obtained findings confirm that REM is greater in both U.S. and Chinese family firms than in non-family firms. Different results for the post-crisis period were noted: US family firms had greater REM than Chinese family firms.

Slightly opposite results were found by (Achleitner et al. 2014) for a sample of 402 German listed family firms and 436 non-family firms over the 1998–2008 period. They found that family firms participate less in REM and more earnings-decreasing accrual-based earnings management ABEM policies than non-family firms. Moreover, family firms use REM activities more strategically to help families retain transgenerational control (i.e., ABEM).

The presented results of the research on the financial conditions of family enterprises in times of crisis show these firms' heterogeneity. The results are not consistent for either international or national research. Undeniably, however, it can be concluded that family businesses behave differently than non-family businesses. Unfortunately, there is still no answer to the question of why these behaviours differ.

Data, stylized facts and methods

To study the impact of financial cycles on family firms, we use the Amadeus database for European companies. We identify family firms following the Global Family Business Index methodology 2019 (EY and the Center for Family Business of the University of St. Gallen). According to this methodology (for details on the

methodology, see FB500), for a firm to be considered a family firm, the second generation or greater must control the firm. One or more family members must participate in business management, that is, be members of either the board of directors or the management. Additionally, the family should own a considerable portion of the company (over 50% of the private company shares and voting rights or public companies in which the family holds at least 32% of the shares and voting rights). From the Amadeus database on European family firms, we identify 62 companies from the Global Family Business Index 2019.

For non-family firms, we use data from the Fortune 500 global list 2019, which includes the largest non-family firms, and extract company indicators from the Amadeus database. We identify 98 non-family firms listed in the Amadeus database. To identify non-family firms, we use data from the Fortune 500 global list 2019, isolating data on the firms not listed in the Global Family Business Index 2019.

The identified family and non-family firms we use in our analysis are among the largest firms (in terms of turnover and employment) from both databases, assuring the statistical validity of the selected samples we use in our analysis.

The sample of countries included in the analysis is restricted by the database we use in the study (only European firms), which includes firm data from 2009 to 2018.

To measure the financial cycle impact, we use data from the Bank for International Settlements (BIS January 2020) on credit-to-GDP gaps. The credit-to-GDP gap is the gap between the credit-to-GDP ratio and its long-run trend. The BIS database covers 44 economies from 1961. The credit-to-GDP ratio lists data on the total credit to the private non-financial sector (total borrowing from all domestic and foreign sources).

(Borio 2014) referred to financial cycles as self-reinforcing relationships between value/risk expectations, risk-taking, and funding constraints. (Claessens et al. 2012) defined financial cycles as booms and busts in the credit, housing, and equity markets.

(Skare and Porada-Rochoń 2020) studied financial cycles for ten developed economies from 1970 to 2018. Most of the countries in their sample were also used in our study. Their results show the financial cycles in the countries under study on average, lasting from 9 to 11 years. In our study, we use data from 2009 to 2019 with ten years of observations, which, according to the study of Skare and Porada-Rochoń (2020), can isolate financial cycle impacts on family firms.

In our study, we use the credit-to-GDP gap as a proxy for financial cycles, following (Claessens et al. 2012), who used the credit-to-GDP ratio (or total credit) and housing prices as proxies for similar medium-term cycles. Thus, the credit-to-GDP ratio can serve as a valid proxy for financial cycles, and we use it in our analysis to study the impact on family firms. (Drehmann and Tsatsaronis 2014) list the issues with using the credit-to-GDP gap as an indicator for financial vulnerability: 1) the credit gap is not an effective buffer reference because it can lead to decisions that contradict the goal of countercyclical capital buffers (CCB); (2) the credit gap is not the best early warning indicator (EWI) for banking crises, especially in emerging economies; and (iii) the credit gap has estimation issues (Behn et al. 2017).

Furthermore, (Drehmann and Juselius 2014) dismissed the issues related to the credit-to-GDP gap, providing supporting evidence that it can serve as a valid proxy for financial crises. Following the above conclusion and (Claessens et al. 2012), the results for the credit-to-GDP ratio show similarity in the medium term to the financial cycle pattern found in (Skare and Porada-Rochoń 2020). Following the empirical

results from the two studies, we conclude that the credit-to-GDP gap exhibits similar medium-term dynamic patterns and thus can serve as a proxy for financial cycles.

Table 1 shows the list of the variables we use in the study, with descriptions.

Table 1 shows the list of indicators (key financial and employment indicators) we use in our model to study the impact of financial cycles on family firms. We employ standard financial indicators with different metrics to ensure the model's robustness.

Having available data in panel form to estimate the impact of a shock (financial cycle) on family firms' performance, we established a panel structural vector autoregression (PSVAR) model. The model's characteristics make it suitable to test our hypothesis that financial cycles hurt fewer family firms than non-family firms since family firms adapt more quickly to new conditions and have less bad governance issues than non-family firms (Berrone et al. 2010), (Miller et al. 2013), (Yildirim-Öktem and Üsdiken 2010). Family firms perform better than non-family firms during financial cycles and financial crises.

We examine the impact of financial cycles using the credit-to-GDP gap on key financial and employment indicators for family/non-family firms between the selected indicator in country i and year t and financial cycles, using the panel vector autoregression model (PVAR) in the reduced form:

$$z_{it} = \Gamma_0 + \Gamma_1 z_{t-1} + \varepsilon_t \quad (1)$$

Following (Abrigo and Love 2016), we use

$$Y_{it} = Y_{it-1}A_1 + Y_{it-2}A_2 + \dots + Y_{it-p+1}A_{p-1} + Y_{it-p}A_p + X_{it}B + u_i + e_i \quad (2)$$

$$i \in \{1, 2, \dots, N\}, t \in \{1, 2, \dots, T_i\}$$

Table 1 Definition and metrics of variables in the study

Variable	Definition	Metrics
TURNOVER	Operating revenue (Turnover)	Mln E
P/L	Profit/loss before taxes (P/L)	Mln E
P/L1	(P/L) Profit/loss for the period [= Net Income]	Mln E
CF	Cash flow	Mln E
TA	Total assets	Mln E
SF	Shareholders funds	Mln E
CR	Current ratio (x)	
PM	Profit margin	%
ROE	ROE using P/L before taxes	%
ROE1	ROCE using P/L before taxes	%
SOL	Solvency ratio (Asset-based)	%
EMP	Number of employees	
FAMILY	Family, non-family firms	Dummy variable, family firms=1, non-family firms=0
CGAP	Credit-to-GDP gap	Actual trend, % of GDP

Source: Amadeus database, Bank for International Settlements statistics (2020)

with.

Y_{it} ($1 \times k$) is a vector of dependent variables from Table 1.

X_{it} ($1 \times l$) is a vector of exogenous covariates.

u_i ($1 \times k$) are vectors of dependent variable-specific panel fixed-effects and

e_{it} idiosyncratic errors.

$A_1, A_2, \dots, A_{p-1}, A_p$ are estimation parameters.

matrix B ($1 \times k$) are estimation parameters, assuming.

$E(e_{it}) = 0, E(e'_{it}e_{it}) = \Sigma$ and $E(e'_{it}e_{is}) = 0$ for all $t > s$.

Systematic cross-sectional heterogeneity is modelled as panel-specific fixed effects following (Holtz-Eakin et al. 1988). First, we use a time-demeaning procedure, removing the forward mean and subtracting the mean for a single firm-year. Our results support the thesis that PVAR results do not differ by demeaning the data before helm transformation, so we do not demean the panel data before estimation.

Table 2 presents the summary statistics for the full sample data.

The optimal lag length in the panel VAR model is selected using the Lagrangian multiplier (LM) test for residual autocorrelation, model selection criteria (MMSC) of (Andrews and Lu 2001) applying a sequential testing procedure with models with 1–3 lags. The bivariate panel VAR is ordered as (1) firms' performance indicator and (2) credit-to-GDP gap. To estimate the (PVAR) for the full sample of the family/non-family subsample, we use the dummy variable Family, which takes a value of 1 for family firms and 0 for non-family firms.

We apply PVAR with GMM (generalized method of moments) to the original data and report the (PSVAR) results in the next section.

Measuring the impact of financial cycles on family firms

To test our primary hypothesis that family firms are better managed in times of financial crisis, resulting in better performance; we run Wald tests of Granger causality for all firms in the sample (see Table 3). A comparison of the results for family firms (Table 4) and non-family firms (Table 5) supports the hypothesis. As we can see in Table 5, non-family firms are highly sensitive to the impact of financial cycles. Financial cycle dynamics measured by the credit-to-GDP gap affect (Granger cause) firms' TURNOVER at a 5% significance level. The Granger causality test between the credit-to-GDP gap and TURNOVER for family firms was not statistically significant. Our primary hypothesis is backed up by the results of the bidirectional Granger causality tests. CGAP impacts TURNOVER (at the 5% significance level), but TURNOVER does not Granger-cause CGAP. Non-family firms are sensitive to financial cycles, but their performance has no significant impact on CGAP because of borrowing constraints (worse financial position, negative firms' performance, and overall market position). The results of the Wald tests of Granger causality for P/L (profit/loss before tax) support the above thesis. We find that CGAP Granger causes P/L at a 10% significance level. We can see from Table 5 that bidirectional (strong) Granger causality between CGAP and P/L exists, with firms' profit/loss dynamics affecting CGAP. Financial cycles have a strong impact on non-family firms' employment

Table 2 Summary statistics for the full sample

Variable		Mean	Std. Dev.	Min	Max	Observations
ID	Overall	80.5	46.2	1	160	$N = 1600$
	Between		46.33	1	160	$n = 160$
	Within		0	80.5	80.5	$T = 10$
Year	Overall	2013.5	2.87	2009	2018	$N = 1600$
	Between		0	2013.5	2013.5	$n = 160$
	Within		2.87	2009	2018	$T = 10$
TURNOVER	Overall	33,347.63	43,880.21	0	372,513	$N = 1408$
	Between		42,289.75	0	297,752.2	$n = 158$
	Within		9831.85	-65,917.57	108,108.4	T bar = 8.91
P_L	Overall	2644.16	4484.11	-8824	42,796	$N = 1387$
	Between		3604.22	-2416	22,166.6	$n = 154$
	Within		2531.29	-17,634.44	26,643.86	T bar = 9.01
P_L1	Overall	1924.36	3782.29	-9378	71,724	$N = 1395$
	Between		2580.12	-1863	13,045.8	$n = 154$
	Within		2714.46	-15,181.53	62,584.47	T bar = 9.06
CF	Overall	3900.19	6097.54	-4796	88,816	$N = 1329$
	Between		5215.04	0	30,022	$n = 147$
	Within		2942.62	-15,946.03	67,890.97	T bar = 9.04
TA	Overall	47,823.76	63,560.28	0.14	458,156	$N = 1433$
	Between		60,948.19	0.19	328,741.7	$n = 158$
	Within		15,052.49	-103,739.9	177,238.1	T bar = 9.07
SF	Overall	17,153.32	27,274.08	-2952	245,092	$N = 1433$
	Between		29,289.54	-181	240,912.5	$n = 158$
	Within		5908.7	-28,972.18	68,636.12	T bar = 9.07
CR	Overall	2.06	5.99	0.05	94.44	$N = 1405$
	Between		7.82	0.5	88.05	$n = 157$
	Within		4.41	-34.51	77.9	T bar = 8.95
PM	Overall	8.77	11.22	-31.19	100	$N = 1312$
	Between		13.13	-4.79	88.66	$n = 149$
	Within		5.38	-39.95	67.82	T bar = 8.81
ROE	Overall	19.21	24.98	-97.53	368.67	$N = 1365$
	Between		19.29	-19.14	133.57	$n = 153$
	Within		18.31	-105.9	254.31	T bar = 8.92
ROE1	Overall	12.36	9.95	-23.52	80.1	$N = 1250$
	Between		8.22	-6.86	44.92	$n = 142$
	Within		6.24	-17.82	62.39	T bar = 8.8
SOL	Overall	39.23	19.29	-29.28	100	$N = 1437$
	Between		18.07	0.07	99.59	$n = 158$
	Within		8.74	-20.84	107.16	T bar = 9.09
EMP	Overall	99,444.92	106,490.4	1	655,722	$N = 1342$
	Between		103,017.8	1.5	527,147.6	$n = 153$
	Within		20,741.83	-70,009.68	249,337.1	T bar = 8.77

Table 2 (continued)

Variable		Mean	Std. Dev.	Min	Max	Observations
FAMILY	Overall	0.39	0.49	0	1	N = 1600
	Between		0.49	0	1	n = 160
	Within		0	0.39	0.39	T = 10
CGAP	Overall	-3.57	17.19	-93.03	83.08	N = 1600
	Between		10.23	-22.6	9.61	n = 160
	Within		13.84	-97.96	78.15	T = 10

Source: Authors' calculation

positions. CGAP Granger causes EMP at a 5% significance level, with a bidirectional Granger causality link running from EMP to CGAP at a 5% significance level. Financial cycles cause significant employment shifts among non-family firms, worsening firms' market position and forcing non-family firms to look to recover on the credit market. For other indicators, we find a unidirectional Granger causality link running from firms' performance indicators to CGAP. This finding proves that financial cycles strongly impact non-family firms' performance, forcing them to turn on the credit market and borrow money, affecting CGAP as a result.

We display (PVAR) modelling results in the tables, with various firms' performance indicators and financial cycle variables differentiated over family/non-family firms. Because of space constraints, we do not display the Wald tests of Granger causality (Granger 1969) for each estimated equation of the underlying (PVAR) model.

From Table 3, we can see the results of the Wald tests of Granger causality between CGAP and firms' performance indicators for the full sample (family and non-family firms). We discuss in detail only Granger causality links that are statistically significant at the 5% and 10% significance levels.

Table 4 shows the results of the Wald tests for the sample of family firms. Displaying the separate results of the Wald tests of Granger causality for family and non-family firms enables us to assess the difference in the impact of the financial cycle across firms. The hypothesis we test is that family firms adapt more quickly to new conditions and have less bad governance issues than non-family firms (Berrone et al. 2010), (Miller et al. 2013), (Yildirim-Öktem and Üsdiken 2010) and perform better during financial cycles and financial crises. The Wald test results for family firms in Table 4 provide empirical evidence to support this claim. From Table 4, we can see that financial cycles measured by the credit-to-GDP gap have only a minor impact on family firms' performances (no evidence on Granger causality links). We find no evidence that financial cycles affect (Granger cause) employment dynamics in family firms. This finding supports the thesis on financial cycles' impact on family firms' employment in a time of crisis, as employment in better-managed firms is not significantly affected. We also find no evidence that financial cycles Granger-cause other performance indicators for family firms, including turnover, profit/loss, profit margin, net income, cash flow, total assets, the current ratio, ROE, ROCE, and the solvency ratio. Comparing the results with those of the Granger causality test for the full sample, we provide empirical evidence to support the claim that family firms are better managed in time of financial cycles, resulting in better performance.

Table 3 (PVAR) Wald tests of Granger causality for the full sample

Equation	Excluded	chi2	Df	Prob > chi2
TURNOVER	CGAP	2.82	1	0.09**
	ALL	2.82	1	0.09**
CGAP	TURNOVER	0.66	1	0.42
	ALL	0.66	1	0.42
P_L	CGAP	3.84	1	0.05*
	ALL	3.84	1	0.05*
CGAP	P_L	9.12	1	0.00*
	ALL	9.12	1	0.00*
P_L1	CGAP	0.78	1	0.38
	ALL	0.78	1	0.38
CGAP	P_L1	3.02	1	0.08**
	ALL	3.02	1	0.08**
CF	CGAP	1.08	1	0.30
	ALL	1.08	1	0.30
CGAP	CF	1.06	1	0.30
	ALL	1.06	1	0.30
TA	CGAP	0.00	1	0.99
	ALL	0.00	1	0.99
CGAP	TA	17.1	1	0.00*
	ALL	17.1	1	0.00*
SF	CGAP	1.39	1	0.24
	ALL	1.39	1	0.24
CGAP	SF	6.20	1	0.01*
	ALL	6.20	1	0.01*
CR	CGAP	0.01	1	0.92
	ALL	0.01	1	0.92
CGAP	CR	5.29	1	0.02*
	ALL	5.29	1	0.02*

Table 3 (continued)

Equation	Excluded	chi2	Df	Prob > chi2
PM	CGAP	2.88	1	0.09**
	ALL	2.88	1	0.09**
CGAP	PM	4.09	1	0.04*
	ALL	4.10	1	0.04*
ROE	CGAP	1.17	2	0.56
	ALL	1.17	2	0.56
CGAP	ROE	4.49	2	0.11
	ALL	4.49	2	0.11
ROE1	CGAP	0.08	2	0.96
	ALL	0.08	2	0.96
CGAP	ROE1	6.40	2	0.04*
	ALL	6.40	2	0.04*
SOL	CGAP	2.22	2	0.33
	ALL	2.22	2	0.33
CGAP	SOL	4.44	2	0.11
		4.44	2	0.11
EMP	CGAP	2.70	2	0.26
	ALL	2.70	2	0.26
CGAP	EMP	5.16	2	0.08**
	ALL	5.16	2	0.08**

Source: Authors' calculation

Notes: * and ** represent the 5% and 10% significance levels, respectively; H_0 means that the excluded variable does not Granger-cause the equation variable

The Wald test results presented in Tables 3, 4 and 5 empirically confirm our primary hypothesis that family firms perform better in times of crisis and are less vulnerable to financial cycles than non-family firms.

After the coefficients of the VAR system are estimated, impulse responses using a Cholesky decomposition (with 5% error bands generated using 500 Monte Carlo replications) and variance decompositions are computed. Here, we discuss only the orthogonalized impulse response (IRF) results for the family firm sample because of space constraints and do not discuss the results for the full sample or the non-family

Table 4 (PVAR) Wald tests of Granger causality for the family firm sample

Equation	Excluded	chi2	df	Prob > chi2
TURNOVER	CGAP	0.49	1	0.49
	ALL	0.49	1	0.49
CGAP	TURNOVER	11.5	1	0.00*
	ALL	11.5	1	0.00*
P_L	CGAP	0.02	1	0.89
	ALL	0.02	1	0.89
CGAP	P_L	8.07	1	0.00*
	ALL	8.07	1	0.00*
P_L1	CGAP	0.27	1	0.60
	ALL	0.27	1	0.60
CGAP	P_L1	5.97	1	0.02*
	ALL	5.97	1	0.02*
CF	CGAP	0.25	1	0.62
	ALL	0.25	1	0.62
CGAP	CF	2.62	1	0.11
	ALL	2.62	1	0.11
TA	CGAP	0.03	1	0.86
	ALL	0.03	1	0.86
CGAP	TA	7.96	1	0.01*
	ALL	7.96	1	0.01*
SF	CGAP	0.3	1	0.59
	ALL	0.3	1	0.59
CGAP	SF	3.04	1	0.08**
	ALL	3.04	1	0.08**
CR	CGAP	0.03	1	0.86
	ALL	0.03	1	0.86
CGAP	CR	6.58	1	0.01*
	ALL	6.58	1	0.01*

Table 4 (continued)

Equation	Excluded	chi2	df	Prob > chi2
PM	CGAP	0.17	1	0.68
	ALL	0.17	1	0.68
CGAP	PM	0.1	1	0.75
	ALL	0.1	1	0.75
ROE	CGAP	0.00	1	1.0
	ALL	0.00	1	1.0
CGAP	ROE	5.01	1	0.03*
	ALL	5.01	1	0.03*
ROE1	CGAP	0.57	1	0.45
	ALL	0.57	1	0.45
CGAP	ROE1	3.87	1	0.05*
	ALL	3.87	1	0.05*
SOL	CGAP	0.03	1	0.87
	ALL	0.03	1	0.87
CGAP	SOL	0.35	1	0.55
		0.35	1	0.55
EMP	CGAP	0.32	1	0.57
	ALL	0.32	1	0.57
CGAP	EMP	0.00	1	0.98
	ALL	0.00	1	0.98

Source: Authors' calculations

Notes: * and ** represent the 5% and 10% significance levels, respectively; H_0 means that the excluded variable does not Granger-cause the equation variable

firm sample. To summarize, the IRFs (with 95% confidence intervals) suggest that financial cycles do not have a significant impact on family firms' performance, proving that they are more resilient to financial cycles than non-family firms (Dufour and Tessier 1993); this finding supports the results of the Wald tests of Granger causality shown in Table 4. Next, we calculate the IRFs for family firms for each performance indicator. We calculate IRF responses to CGAP for TURNOVER, P/L, P/L1, CF, TA, and SF as the associated annual percentage change in the growth rate. We do not present the calculated IRFs here due to publication space constraints.

Table 5 (PVAR) Wald tests of Granger causality for the non-family firm sample

Equation	Excluded	chi2	df	Prob > chi2
TURNOVER	CGAP	4.23	1	0.04*
	ALL	4.23	1	0.04*
CGAP	TURNOVER	4.23	1	0.29
	ALL	4.23	1	0.29
P_L	CGAP	3.21	1	0.07**
	ALL	3.21	1	0.07**
CGAP	P_L	5.31	1	0.02*
	ALL	5.31	1	0.02*
P_L1	CGAP	0.54	1	0.46
	ALL	0.54	1	0.46
CGAP	P_L1	2.73	1	0.1
	ALL	2.73	1	0.1
CF	CGAP	1.06	1	0.3
	ALL	1.06	1	0.3
CGAP	CF	1.07	1	0.3
	ALL	1.07	1	0.3
TA	CGAP	0.00	1	0.97
	ALL	0.00	1	0.97
CGAP	TA	9.27	1	0.00*
	ALL	9.27	1	0.00*
SF	CGAP	0.95	1	0.33
	ALL	0.95	1	0.33
CGAP	SF	3.93	1	0.05*
	ALL	3.93	1	0.05*
CR	CGAP	0.47	1	0.49
	ALL	0.47	1	0.49
CGAP	CR	1.80	1	0.18
	ALL	1.80	1	0.18

Table 5 (continued)

Equation	Excluded	chi2	df	Prob > chi2
PM	CGAP	1.41	1	0.24
	ALL	1.41	1	0.24
CGAP	PM	1.35	1	0.25
	ALL	1.35	1	0.25
ROE	CGAP	0.02	1	0.9
	ALL	0.02	1	0.9
CGAP	ROE	0.41	1	0.52
	ALL	0.41	1	0.52
ROE1	CGAP	1.32	1	0.25
	ALL	1.32	1	0.25
CGAP	ROE1	0.53	1	0.47
	ALL	0.53	1	0.47
SOL	CGAP	0.77	1	0.38
	ALL	0.77	1	0.38
CGAP	SOL	1.72	1	0.19
		1.72	1	0.19
EMP	CGAP	3.84	1	0.05*
	ALL	3.84	1	0.05*
CGAP	EMP	4.13	1	0.04*
	ALL	4.13	1	0.04*

Source: Authors' calculation

Notes: * and ** represent 5% and 10% significance levels, respectively; H_0 means that the excluded variable does not Granger-cause the equation variable

Conclusion

Crisis governance is a key factor in managing financial cycles. We find that family firms effectively manage financial cycles because their managers establish an effective prioritizing governance policy. Alternatively, in non-family firms, such effective prioritizing governance policy is missing (governance being still behind turnover and profits), making them more vulnerable to financial cycles and crises. Our study results support the finding that governance is a key factor in fighting

crises by family firms (Aldamen et al. 2011), (DeCiantis and Lansberg 2017), (Vojtko et al. 2019), (Gatarik 2019).

We find that the most effective governance policy that family firms use to fight the negative impacts of financial cycles consists of six determinants (elements of resilience): modularity, adaptability, embeddedness, self-regulation, redundancy, and diversity, as identified in DeCiantis and Lansberg (2017) and Staszkiwicz and Szelągowska (2019).

This study investigated the impact of financial cycles on family firms and non-family firms from 2009 to 2018 across 18 countries (Spain, Germany, the Netherlands, Switzerland, Austria, France Denmark, Italy, Luxembourg, Sweden, Portugal, Finland, Russia, Ireland, Norway, Belgium, the UK, and Greece). To our knowledge, this is the first study to examine and demonstrate that family firms perform better during financial cycles and in times of crisis than non-family firms. Our results provide empirical evidence using data from the Amadeus database and the Bank for International Settlements.

We use panel vector autoregression analysis (Abrigo and Love 2016) to study the impact of financial cycles on firms' performance for all three samples (the full sample, the family firm sample, and the non-family firm sample). The results of panel Wald tests of Granger causality (PVAR) indicate that family firms perform better and are less vulnerable to financial cycles than non-family firms. This finding is in line with previous studies on family firms, which indicate that they adapt more quickly to new conditions and have less bad governance issues than non-family firms (Berrone et al. 2010), (Miller et al. 2013), (Yildirim-Öktem and Üsdiken 2010), (Hirigoyen and Basly 2019).

Our study indicates that family firms' governance and characteristics are important drivers of their performance. Motivational drivers and better firm governance policies to protect shareholder and stakeholder interests make family firms less sensitive to exogenous financial shocks in the form of financial cycles. Family firms are as exposed to financial cycle shocks as non-family firms are, but their adaptability and flexibility make them more robust to the negative effects of shocks. Family firms do not perform better only during financial busts; they also outperform non-family firms during the boom phase of the financial cycles. Their business strategy, market orientation, and vision of future market conditions offer them better governance in good as well as bad times. Our study suggests that managers should be motivated and trained more in good management practices to keep pace with (more pronounced and more frequent) financial cycle challenges. This study's results provide strong empirical evidence regarding the competitive advantage firms could achieve, resulting from the adoption of good governance practices by family firms.

In addition to micro policymaking implications, our study's results have important findings for policymakers at the aggregate level. Policymakers should target economic policy to stimulate the growth and development of family firms. This policy is beneficial for the economy, as it makes firms more robust to exogenous economic shocks, while also providing firms with good practices for how to fight crises. Economic policy to fight economic crises (financial crises or other crises, such as the current pandemic) must be differentiated and well targeted to avoid double- or triple-dip crises. Massive financial incentives, such as those we have seen in the current fight against the COVID-19 crisis, should not be distributed selectively. Targeting family firms with supportive financial schemes in times of crisis will help them to get on their

feet more quickly, allowing the national economy to recover quickly and robustly. Currently, this is not the case, with significant financial funds going to firms with no chance to survive on the market given the response to the COVID-19 crisis. Our analysis shows that family firms, on the other hand, have a significantly higher probability of surviving a crisis (financial or pandemic) and strongly contribute to economic recovery. Policymakers must make economic policy selective towards family firms first.

Our study has several limitations resulting from data availability. We have a limited data period from 2009 to 2018, which is sufficient to isolate financial cycles, and to measure all direct and indirect impacts, we should have more time-series data. Additionally, we have data on 18 European countries, and the results will be more robust and indicative of having in the sample countries outside the EU. Our (PVAR) results could be confirmed with the panel structural vector autoregression results or local projection models.

The confidence in our results could be strengthened with access to large firms' databases, including more time series and longitudinal panel data. The availability of a larger sample will enable us to explore the impact of financial cycles on family firms' in more depth. We hope our study will encourage researchers to explore the impact of financial cycles on family and non-family firms because there is a significant gap in the literature.

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