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Hybrid Until the End? Predicting Financial Vulnerability in Hybrid Purpose Organizations

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ABSTRACT

This study modifies the traditional nonprofit and for-profit measures of predicting organizational closure to fit the Italian social cooperative. Using logistic regression, we find the hybridity of the corporate form reflected in the ideal predictors of vulnerability. Some of the traditional nonprofit measures prove important (such as operating margin), but others do not; likewise, only some for-profit predictors (such as the warranty ratio) prove significant. Further, there are several variables that improve the model that are not common in the models for the nonprofit and for-profit sectors. We consider this evidence that hybrid purpose organizations worldwide should develop hybrid measures and models of financial vulnerability and resilience.

1 | Introduction

In the last two decades, hybrid purpose organizations (HPOs) have been studied by researchers from many different perspectives since there is inherent tension between the dual pursuit of mission and financial success. However, studies that predict financial vulnerability in HPOs are essentially absent, despite an extensive literature on predicting organizational closure or financial vulnerability in both commercial ventures (Altman 1968; Beaver 1966; Jones 2017; Boratyńska and Grzegorzewska 2018; Lukason and Laitinen 2019) and charities (Chen 2021; Hager 2001; Park et al. 2022; Trussel and Greenlee 2004; Tuckman and Chang 1991). HPOs should have accounting ratio analysis that reflects the nuances of their corporate form; otherwise, how can an organization plan for sustainability if they do not know what predicts organizational demise?

This article aims to fill the gap in predicting financial vulnerability in HPOs and to answer whether such factors resemble nonprofit or for-profit organizations. To accomplish this, we analyzed Italian Social Cooperatives (ISCs), which are recognized as one of the most significant examples of HPOs at the international level (Cooney 2016; Doherty et al. 2014). Specifically, this study tests the hybridity of ISCs by evaluating whether the traditional nonprofit and for-profit measures of predicting organizational closure are more effective for the Italian HPO model. The ISC is a unique case of hybridity that stemmed from traditional cooperatives, nonprofit organizations, and commercial ventures; though some view the traditional cooperative as social, there was demand for an organizational form dedicated to a more unconditional type of market exchange (Poledrini 2015; Poledrini and Tortia 2020; Poledrini and Borzaga 2021). We use financial information on ISCs for the years 2014 through 2018 from the AIDA database (Costa and Carini 2016; Picciotti et al. 2014; Poledrini et al. 2022), but with the novelty of a hybrid approach to predicting financial vulnerability.

We find the hybridity of the corporate form reflected in the ideal indicators. Some of the traditional nonprofit measures prove important (such as operating margin), but others do not; likewise, some predictors more common in the for-profit sector (such as

the warranty ratio) also prove significant. However, there are several variables that improve model fit for ISCs that are not common in either nonprofit or for-profit models, resulting in a unique custom model.

This research note is organized as follows. In the next section, we will examine the importance of hybridity and the significance of predicting financial vulnerability in both for-profit and nonprofit organizations. Subsequently, we will introduce hybrid predictors tailored for hybrid-purpose organizations, present our methodology and data, and then analyze the results. Our findings lead us to the conclusion that an approach that incorporates the unique characteristics of HPOs is optimal for predicting their financial vulnerability.

2 | The Importance of Hybridity

In the last three decades, a new model of organization emerged with a unique ability to innovate and respond in different ways to social needs (Bauwens et al. 2020; Haigh et al. 2015; Tortia et al. 2020). These are called HPOs that are characterized as having some aspects of both categories of for-profit and nonprofit, but they are different and unique entities (Battilana and Dorado 2010; Doherty et al. 2014; Kurland 2022).

The term "hybrid" does not have a single definition shared by all scholars, though most agree that HPOs have characteristics coming from two or more types of already established organizations (Alberti and Varon Garrido 2017; Billis 2010). Such hybrid enterprises are essential to the development of a balanced "wellbeing economy," though there are theoretical and empirical challenges in their development and utilization (Roy 2021, 269).

To date, HPOs have been studied from various points of view. However, the critical issue of predicting financial vulnerability has not received much attention within the framework of HPOs (Cornelissen et al. 2020; Kročil et al. 2023; Reynolds and Holt 2021). This is surprising given that HPOs, by definition, possess a tension between pursuing commercial and social objectives (Alberti and Varon Garrido 2017; de Mon et al. 2022; Gidron 2016). This tension would influence when and how HPOs would find themselves in financial trouble, since nonprofit-maximizing behaviors are often inherent in serving social aims. Further, there are also different constraints regarding which financial measures can be employed, such as an asset lock preventing the issuance of equity stakes to raise capital depending on the specific HPO form. To understand the predictors of HPOs closure, we first review the literature on for-profit and nonprofit financial vulnerability.

3 | Predicting Financial Vulnerability in for-Profit and Nonprofit Organizations

Significant scholarship has explored business crises for for-profit companies writ broadly (Bertoli 2000; Coda 1977; Danovi and Quagli 2012; Guatri 1986). From a financial point of view, the crisis coincides with insolvency, that is, with the inability of the company to pay its debts due to the lack of liquidity and credit (Zito 1999); nevertheless, insolvency is only the final stage of a crisis that has both financial and economic causes. In fact, in the theory of value (Guatri 1991; James 2010), the crisis takes the form of a vicious circle that starts from profitability problems that determine economic losses and, therefore, erosions of the value of capital; the consequent imbalances in financial flows lead to a loss of trust from lenders (Guatri 1995).

The academic attempts to forecast such crises began with North American scholars, especially Altman (1968) and Beaver (1966). However, to date, these models have not been recalibrated to investigate whether or how many of the ratios take on a different meaning for HPOs. This is especially important for those ratios considering economic performance. Therefore, we believe that it is not possible to use for-profit models uncritically for HPOs (Beaver 1966; Zmijewski 1984).

Financial ratio analysis in the nonprofit sector has been common for less time than in the commercial sector, but it has become an important part of strategic financial management (Searing and Berkovich 2022). Tuckman and Chang (1991) used only four indicators (inadequate equity balance, revenue concentration, low administrative costs, and low operating margins). Trussel and Greenlee (2004), in addition to the four traditional ratios used by Tuckman and Chang (1991), also considered organizational size (measured by total assets) and the subsector of activity. Both studies found that larger nonprofit organizations are less financially vulnerable and that significant differences exist among the different nonprofit subsectors.

More recently, other researchers concentrated their efforts on improving the prediction of nonprofit organizations financial vulnerability by considering new contexts. Abínzano et al. (2023) specifically focus on revenue diversification in the Spanish context, finding that concentration increases vulnerability but that the effect is moderated by other variables. Mazanec and Bartosova (2021) test the established nonprofit indicators in the Slovak nonprofit context, finding that they are functional (albeit not perfect) predictors of vulnerability. However, despite these improvements, the lack of ownership interest and the normative pressure to minimize surplus provides doubt that nonprofit models of predicting financial vulnerability are ideal for HPO forms.

4 | Hybrid Predictors for HPOs

Despite the growth of ratio analysis in the nonprofit sector (including notes of concern, such as Prentice (2016)), there has been a lack of similar extension of the practice into the diverse field of HPOs. Much of the accounting ratio analysis used in the HPO literature involves measuring impact or the social return on investment (SROI) (Cordes 2017; Ryan and Lyne 2008; Millar and Hall 2013).

In the literature, we can find just two studies in recent years (Costa et al. 2012; Costa and Carini 2016) which employ four ratios in

exploring the efficiency and performance of HPOs in the case of ISCs in Northern and Southern Italy. These ratios are profit (or loss)/turnover, turnover/total operating expenses, equity/total assets, and fixed assets/total assets. Of particular note is the role that geography plays in these studies. Since many ISCs are firmly rooted in their local community, we consider the increased attention to location to be a unique and appropriate addition to the study of financial health in HPOs, particularly ISCs.

5 | Methods

This study posits that the optimum model for predicting financial vulnerability in HPOs will be a hybrid model of accounting indicators from the nonprofit and for-profit literatures. We test the fit and predictive power of models of financial vulnerability on the population of ISCs using logistic regression with "success" indicating organizational closure. The four models are shown in Table 1.

First, we test a nonprofit model based on Trussel and Greenlee (2004). Next, we test a for-profit model based on Ohlson (1980). We then test an additive model that simply combines the nonprofit and for-profit models. Finally, we test a cumulative hybrid model that contains elements from the previous models plus attributes unique to the ISC data, which we call the Unique ISC Ratio Model.

The Unique ISC Ratio Model includes seven ratios. The first three ratios aim at verifying the existence (or not) of a situation of financial balance (more specifically: *current ratio*, useful to outline the company's solvency and liquidity conditions in the short term, *warranty ratio*, that indicates the existence of an adequate capital solidity with a significant contribution of equity in the financing of fixed assets, and *equity multiplier*, that expresses the equity balance in the financial structure between equity and debts); the next three verify the presence (or not) of a condition of economic balance (more specifically: *ROA*, that measures the overall economic performance of the organization, *ROS*, that measures profitability in terms of return on sales, and *EBITDA on total assets*, that focuses, within the framework of the above-mentioned overall economic performance, the contribution of the core business). The seventh ratio is the sustainability financial charge (SFC), which is a kind of "bridge" between economic balance and financial balance, verifying the affordability of the financial choices in terms of their economic impact (Montrone 2016).

In addition to these seven ratios, the final Unique ISC Ratio model also includes another seven variables. Similar to the for-profit and additive models, we include a *lag of income growth* and a *variance* measure for net income. Like in the nonprofit and additive model, we include *subsector* dummies. We include a measure of size based on *employees* (similar to the nonprofit and additive model), but we also include a measure of size based on *assets* due to the heavy reliance of some ISCs on volunteers. There are two nonratio measures that only appear in the Unique ISC Model: *age* and *location*. Since this legal form has not existed very long, we expect that there may be cohort effects for those organizations that have existed since the legal establishment. Finally, due to the close connection between social cooperatives and their location, we also include dummies for the area in which the cooperative operates.

6 | Data

This study utilizes data on the population of ISCs available through the AIDA database (Bureau Van Dijk 2020). We chose ISCs because they are an example of a hybrid country-specific corporate form dedicated to social good, but not a charity. In Italy, cooperatives and social cooperatives have the same profit distribution constraint and participatory governance, but they differ in terms of economic activity and the mutuality principle (European Commission 2020). Indeed, cooperatives can participate in any economic activity in favor of their members, while ISCs can only provide social, health, and educational services or work integration activities for disadvantaged people. ISCs are among the most cited examples of HPOs in the literature as they were among the first in the world recognized by a national law (Borzaga and Galera 2016).

The original data had 17,570 observations representing 3514 ISCs over 5 years (2014 through 2018). We chose 2018 as the terminating year to entirely avoid the emergence of the COVID-19 pandemic, which shifted business models for several years and impacted the completeness of reporting. The observations for six ISCs were dropped from the analysis as duplicates, and 2445 observations were removed from the sample for having incomplete reporting years.

The largest data loss stemmed from the need for a uniform sample on which to compare the fitness and predictive power of the models. Since this study compares predictive power across models, this sample required that data be reported for all necessary variables for all models and years, including data needed for lagged predictor variables and the determination of closure. The final sample contains 2567 observations of unique ISCs in the base year of 2017, with supporting information from other years for the lagged predictor variables.

Like nonprofits, organizational "death" is difficult to determine since many ISCs do not declare bankruptcy, and liquidation can last for years. Instead, we consider a "death" in 2017 to be indicated by an absence of filing data for both 2017 and 2018. This minimizes the likelihood that the lack of filing for a single year was simply an administrative oversight.

Our dependent variable has a value of "1" (or "dead") only if an ISC did not report during 2017 and 2018 but did report during 2014, 2015, and 2016. The dependent variable has a value of "0" (or "living") for ISCs that reported during 2014, 2015, and 2016 and then reported for both 2017 and 2018. ISCs that did not fully meet either criterion were excluded from the sample. Of the 2567 unique organizations in the sample, 99 are "dead."

7 | Findings

The results of the four regressions are shown in Table 2 for 2017 closure using 2018 nonreporting as corroboration for closure and 2016 values as predictors. A positive dependent variable indicates closure. Robust standard errors are clustered on the organizational level. The base subsector is green cleaning and maintenance, while the base location is not located in one of the major cities. Results from the models with one lag are shown and interpreted, but models with 2 years of lag are available by

TABLE 1 | Accounting ratios from different sectors.

Attribute measured	NP ratios (Trussel and Greenlee 2004)	FP ratios (Ohlson 1980)	Italian NP + FP ratios	Unique ISC ratio model
Solvency and liquidity		CurrAss/STLiab	CurrAss/STLiab	CurrAss/STLiab
Financing of fixed assets				NA/fixed assets
Equity balance	NA/TotRev	TotLiab/NA	TotAss/NA	TotAss/NA
ROA		NetInc/NA	NetInc/TotAss	NetInc/TotAss
Profitability	NetInc/TotRev		NetInc/TotRev	NetInc/TotRev
Contribution of core		EBIT/TotLiab	EBITDA/TotAss	EBITDA/TotAss
Affordability of debt				EBITDA/FinanExp
Rev diversific	*HHI*			
Slack	*Admin/TotExp (+)*			
Income growth lag		Y/N that Prev Yr NI was < 0	Y/N that Prev Yr NI was < 0	Y/N that Prev Yr NI was < 0
Net income variance		Scaled % change in NI	Scaled % change in NI	Scaled % change in NI
Subsector	X		X	X
Age				X
Size	X		# employees	# employees
Geography				X (Many)

Note: Italics mean that we do not have the data to measure this attribute.

TABLE 2 | 2016 predictors of Italian Social Cooperative Closure in 2017.

	(1)	(2)	(3)	(4)
Variables	**2016 NP logit**	**2016 FP logit**	**2016 NP + FP logit**	**2016 Unique ISC logit**
Solvency and liquidity		−0.593***	−0.434***	−0.418***
		(0.157)	(0.127)	(0.137)
Fixed asset financing				0.001
				(0.001)
Equity balance	−1.370***	0.000[a]	0.000	0.000
	(0.368)	(0.000)	(0.000)	(0.000)
ROA		0.002	−1.176*	−1.567**
		(0.004)	(0.657)	(0.781)
Sales' profitability	−1.491***		−0.849**	−0.601
	(0.442)		(0.425)	(0.390)
Contribution of core		−1.308***[a]	−0.047	0.231
		(0.387)	(0.661)	(0.689)
Affordability of debt				−0.000
				(0.000)
Income growth lag		0.950***	0.724**	0.807***
		(0.264)	(0.286)	(0.309)
Net income variance		−0.088	−0.090	−0.077
		(0.188)	(0.194)	(0.200)
Age				−0.019
				(0.017)
Size (employees)	−0.007**		−0.007**	−0.007*
	(0.003)		(0.003)	(0.004)
Size (assets)				0.084
				(0.123)
Sector: hospitality	−1.621		−1.879*	−2.033*
	(1.041)		(1.039)	(1.099)
Sector: education	−0.928**		−0.862*	−0.865*
	(0.462)		(0.481)	(0.490)
Sector: health care	−0.875		−0.783	−0.866*
	(0.635)		(0.583)	(0.498)
Sector: manufacturing	−0.280		−0.296	−0.276
	(0.455)		(0.463)	(0.466)
Sector: non-res.	−0.753**		−0.627**	−0.635*
Elder and disabil. care	(0.340)		(0.319)	(0.327)
Sector: day care for	−1.341**		−1.343**	−1.418**
Disabled minors	(0.617)		(0.622)	(0.627)
Sector: other non-res.	−1.392**		−1.381**	−1.350***

(Continues)

TABLE 2 | (Continued)

Variables	(1) 2016 NP logit	(2) 2016 FP logit	(3) 2016 NP + FP logit	(4) 2016 Unique ISC logit
Care for minors	(0.565)		(0.543)	(0.522)
Sector: other	−0.881**		−0.987**	−1.074**
	(0.429)		(0.446)	(0.453)
Sector: residential	−0.973**		−1.008***	−1.041***
Care	(0.396)		(0.383)	(0.400)
Sector: transportation	−1.248		−1.387	−1.331
	(1.059)		(1.106)	(1.138)
Sector: waste	−0.173		−0.134	−0.165
Collection	(0.606)		(0.619)	(0.682)
Sector: wholesale/	−3.157		−2.515	−3.179
Retail	(7.827)		(3.483)	(4.741)
Roma				1.300***
				(0.318)
Palermo				−0.773
				(1.015)
Catania				1.515***
				(0.415)
Genova				0.048
				(0.563)
Napoli				0.338
				(0.565)
Milano				−0.327
				(0.754)
Bergamo				0.09
				(0.767)
Constant	−2.167***	−2.580***	−1.901***	−2.380***
	(0.283)	(0.290)	(0.418)	(0.792)
Wald $p > 0$	0.000	0.000	0.000	0.000
Pseudo R^2	0.162	0.123	0.184	0.216
% correctly classified	96.30	96.18	96.46	96.53
+Classification D/~D	11/7	2/1	11/3	14/4

Note: Robust standard errors in parentheses clustered on organization. $N = 2567$.
[a]The Ohlson model has liabilities in the numerator rather than assets. We chose to accurately represent his model, but the impact should be interpreted opposite to the sign of the other equity measures.
***$p < 0.01$.
**$p < 0.05$.
*$p < 0.1$.

request; the models are weaker (as expected with increased temporal distance), but generally consistent.

For the nonprofit model, we find that ISCs with more equity per Euro of revenues are less likely to close. We see a similar expected sign on profitability, where more profitable firms are less likely to close. Both values are highly significant.

For the commercial model, we also find expected signs but not expected significance. Firms that have more liquid asset

portfolios are less likely to close, as are firms with more earnings per Euro of debt (Contribution of Core). We also see that a history of income growth bodes well for survival. However, the impact of a healthy equity balance and return on assets is both insignificant.

When we combined the nonprofit and for-profit models, most of the results we originally saw in the component models stayed consistent. ISCs that were more liquid and more profitable were less likely to close, and a higher return on assets improved the chances of survival. However, the equity balance and net income variance remained insignificant, and the contribution of the core became less useful as an indicator.

The final combined model takes advantage of insights from all three prior models, plus utilizes unique insights from geographical location and fixed asset financing. Though the fixed assets were not statistically significant, the geographical locations were, with both Rome and Catania possessing unique traits that differentiated them from those ISCs outside of major cities. The model retains most of the insights gained from earlier models: higher levels of liquidity and return on investment are beneficial to longevity, as is a history of income growth. However, the equity balance and profitability did not receive emphasis in the final model.

The goodness-of-fit measures for all models are located at the bottom of Table 2. As shown, all models meet the Wald test. The model with the least explanatory power according to the Pseudo-R-squared metric is the for-profit logit, which explains slightly more than 12% of the variance in the dependent variable. The nonprofit logit fares slightly better at just over 16%, followed by the NP + FP model (18.4%). However, the final combined model was the best fit, explaining almost 22% of the variance. Therefore, we find general support that a custom model with elements of both nonprofit and for-profit estimators plus metrics that capture unique attributes is the best fit for ISCs.

The final custom model is also the best using the percent correctly classified as a metric. This is a common metric for predictive power, but we would like to urge caution here. Our penultimate model predicts the outcomes for 96.5% of the sample correctly. However, this metric could be influenced by the low numbers of closures contained in the data. To illustrate this, the row labeled "D/~D" are the number of correctly predicted true closures compared to the number of ISCs that the model labeled as closures that were actually fine. On both metrics, the fourth model is the best fit.

As a robustness check for our original logistic regression approach, we also split the original dataset randomly into a training set and a test set. We fitted the single-lag penultimate regression model to the training set, then tested the model on the reserved test set. Model fit was similar to the unified model, with 96.08% correctly classified. We do not pursue this approach as the main model due to the low numbers in some of the sectors and geographical locations, which through chance meant that all observations in some of these categories ended up entirely in one sample or the other. This results in the loss of those observations from the analysis, which we consider unnecessary due to the marginal difference between the predictive split set and the pooled logit approach. Ergo, our initial findings are supported with the predictive split set, but we retain the pooled logit approach as our primary method for the sake of data preservation.

8 | Conclusion

This study tests the fit and predictive power of different models of financial vulnerability on the population of ISCs. We find that, like many other aspects of management, a hybrid approach to predicting financial vulnerability is best, with the optimum being one that reflects the unique characteristics of ISCs. Though caution should always be taken when generalizing outside of a specific country context, we believe that this expands the theoretical argument that the hybridity of HPOs permeates all aspects of the organization, from objective function to financial management. This study also adds empirical justification to the development of unique standards and tailored metrics for HPOs for such things as financial resilience and vulnerability, rather than simply importing the tools and metrics designed for other organizational types.

Further, we find evidence confirming and extending the work of Costa and Carini (2016) on the unique role of location in the health of ISCs, though the effects center on city and not region. For example, we find that ISCs in Catania are more likely to fail compared to rural ISCs than those in Palermo, though both cities are in the same southern region (Sicily). Olmedo and O'Shaughnessy (2022) also emphasize the role that geography and urbanity play in the ways social enterprises contribute to community resilience. In our study, we find it natural that a community-focused cooperative model would reflect the trials of its home city, but further study is needed to disentangle the geographical effects.

There are also limitations to the analysis. First, article analysis is limited to ISCs. Though this study is one of the first to test vulnerability models for hybrids, international comparative studies exploring metrics for different types of HPOs would be most welcome in the future. Also, the study is primarily empirical, so future studies could build on the theoretical link between hybridity and the importance of unique HPOs attributes. We also suspect that the requirement of full reporting has eliminated the most vulnerable from the sample, meaning that our results may potentially understate the impact of our metrics (though this will be consistent across the comparison.) Finally, though we consider it a good thing for Italian society that so few ISCs are failing, we recognize that this does potentially limit our research. The existence of so few closed cooperatives to train the models means that our best model correctly classifies 96.53% of the sample but predicts only 14% of the closure instances. Future studies that can capitalize on a longer panel and more failures of ISCs should be able to use more sophisticated econometric modeling techniques. However, this study is an important first step in exploring both the manifestation of hybridity in using ratio analysis and what this means for managers of ISCs.

Using these specific metrics, different stakeholders of the HPOs can now gain more practical and concrete insights into their organizations. In turn, this information can help policymakers, entrepreneurs, managers, and investors act in the most useful

ways to address the different causes and symptoms that arise. For example, policymakers can use these indicators to be more aware of HPOs' financial needs and potential vulnerability, especially in contexts where data is widely available. Different interventions can be tried to address specific issues, such as prioritizing liquidity rather than solvency since findings indicate that revenue measures are more consequential than equity ones. Policymakers and investors can target scarce public and private resources toward the most impactful interventions. This is particularly crucial after the severe hardships caused by the COVID-19 pandemic.

Finally, entrepreneurs and managers can also use these indicators to monitor the financial health of their HPOs. If they have negative profitability as an income-driven organization or appear to be spending more on financing fixed assets compared to peer organizations, then this should be cause for concern. Even beyond crisis response, routine monitoring using a dashboard of these indicators could help guide strategic decisions in terms of resources, markets, and services. In the past, there has been hesitancy to use such tools because of a fear of ill fit; an HPO had to choose between commercial and nonprofit options with no guidance on which measures are appropriate. This hesitancy inhibited the growth and success of important organizations that provide economic and financial value for not only their members, but also broader society. Therefore, we encourage further study, tailoring, and testing of metrics for different HPO forms to encourage the uptake of such tools.

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Disclosure

The authors have nothing to report.

Data Availability Statement

The data that support the findings of this study are available in the AIDA Italian Company Information and Business Intelligence database. These data are available from Bureau Van Dijk at http://www.bvdinfo.com.

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