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The Relationship Between Cash Flow Shocks, Fixed Assets, and External Financing in Emerging Market

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Abstract

Purpose: This study examines how cash flow shocks and the interaction between cash flow and fixed assets influence external financing decisions of financially constrained and unconstrained firms in Nepal.

Design/Methodology: The analysis is based on secondary data from annual reports and the Nepal Stock Exchange (NSE), covering 19 non-financial listed firms over the period 2004–2022. The study is quantitative in nature and adopts descriptive and causal-comparative research design.

Findings: The results indicate that financially strong firms reduce their reliance on external financing as cash flows improve, while financially constrained firms show limited responsiveness to cash flow variations. However, during periods of credit market instability, constrained firms experience greater uncertainty but demonstrate a stronger inclination to seek external financing for growth opportunities. The study also reveals a positive interaction between cash flow and fixed assets, underscoring the role of asset tangibility in financing strategies under financial constraints.

Implications/Limitations: The findings offer practical implications for policymakers and financial institutions in framing credit policies tailored to firm-level constraints and asset structures. The study is limited to listed non-financial firms, which may restrict wider generalizability.

Keywords: *Asset tangibility, Cash flow shocks, Credit market instability , External Financing, Financial constraints.*

Jel classification: G30, G31, G32, E44

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Study Context

Financial constraints pose significant challenges to the growth and sustainability of firms, especially small and high-growth enterprises. These challenges often stem from limited cash flow, high debt levels, and informational asymmetries, which drive firms to rely on internal funding (Fazzari et al., 1988; Campello et al 2010 and Ding et al., 2024). The pecking order theory provides a useful framework for understanding firms' financing behavior, suggesting that companies follow a hierarchical preference in funding decisions—first relying on internal finance, then on debt, and finally on equity. This preference stems from information asymmetry and the high costs associated with external financing, such as flotation and adverse selection costs (Almeida & Campello, 2010; Lyandres, 2007). The theory implies that managers aim to minimize these costs and retain control by avoiding external capital unless internal resources are exhausted. However, contrasting this classical framework, studies by Chen (2004) and Silwal (2024) found that some firms deviate from the traditional hierarchy by prioritizing internal equity, followed by external equity, and placing debt last. This pattern may reflect a cautious financial stance, particularly in developing economies like Nepal, where capital markets are less efficient, debt financing involves stringent collateral and compliance requirements, and access to long-term credit remains limited. Similarly, the trade-off theory underscores the balance firms seek between the benefits of debt—such as tax shields—and its associated costs, including financial distress, bankruptcy risk, and agency conflicts (Myers, 1984; Kraus & Litzenberger, 1973; Rodriguez, 2024). Unlike the pecking order theory, which focuses on financing preferences under asymmetric information, the trade-off theory emphasizes the pursuit of an optimal capital structure where the marginal benefits and costs of debt are balanced. Collectively, these theories offer complementary insights, revealing that firms in emerging markets often prioritize financial flexibility and risk aversion over theoretical optimization, given their exposure to uncertain cash flows, limited market depth, and institutional constraints.

Market imperfections, such as asymmetric information and agency problems, increase the cost of external financing and shape firms' funding decisions (Myers & Majluf, 1984; Costa, Habib, & Bhuiyan, 2021; Stiglitz & Weiss, 1981). In developing economies like Nepal, these constraints are intensified by evolving financial markets and regulatory environments, further restricting access for smaller, younger, and less transparent firms (Berger & Udell, 1998; Fan, Peng, Wang, & Xu, 2021; Beck, Demirgüç-Kunt, & Maksimovic, 2005). Following COVID-19, Nepal's credit crisis illustrated how constrained bank lending critically hampers business continuity (Silwal, 2023). During and immediately after the pandemic, bank lending of the Nepalese BFIs to the capital market surged, pushing the market to its peak. By contrast, U.S. firms experienced significantly lower bank funding costs during the same period (Tran et al., 2024). The manufacturing and trading sectors, due to their seasonal nature, were particularly vulnerable, prompting banks to reject many loan requests and forcing businesses to rely on informal financing, such as borrowing from relatives or using internal resources (Biggs, Shah, & Srivastava, 1995, Silwal & Mool, 2020).

The financing decisions of firms are shaped by both internal and external constraints, with different theories offering contrasting perspectives on their effects. The pecking order theory (Myers, 1984) highlights a negative effect of external financing, as firms prioritize internal funds over debt and equity due to the higher costs and information asymmetry associated with external sources. In contrast, the

trade-off theory (Kraus & Litzenberger, 1973) suggests that while external debt offers positive effects through tax benefits, firms in uncertain markets—such as Nepal—tend to avoid excessive borrowing due to the heightened risk of financial distress (Titman & Wessels, 1988).

Beside these theories, the relationship between cash flow and external financing remains a subject of debate, as different factors influence a firm's reliance on external funds. Tobin's Q (Gilchrist & Himmelberg, 1995; Erickson & Whited, 2000; Gomes, 2001) suggests that external financing decisions depend on a firm's growth opportunities, where firms with higher investment prospects are more likely to seek outside funding. However, negative cash flow observations (Allayannis & Mozumdar, 2004) can deter external financing, as they signal financial instability to lenders. Meanwhile, insiders' evaluations of investment opportunities (Carpenter & Guariglia, 2008) and heterogeneous measures of financial constraints (Moyen, 2004) further shape firms' financing behavior. Additionally, the role of fixed assets and cash holdings (Almeida & Campello, 2010) influences access to external funds, as firms with more tangible assets can secure financing more easily compared to those with lower collateral value.

Specially, access to credit for small and medium-sized enterprises (SMEs) in developing economies faces significant challenges, exacerbated by the limited reach of nonprofit organizations and inefficiencies within commercial banking systems (Karlan & Morduch, 2010; Honohan & Beck, 2007; Sommer, 2022). While substantial research has been conducted on financial constraints in developed markets, the dynamics between internal cash flows and external financing in developing countries, such as Nepal, remain largely underexplored. Additionally, the critical role of internal cash flows in influencing investment and financing decisions—especially during periods of financial distress—has not been adequately examined in the Nepalese context.

Besides, understanding the macroeconomic implications of financial constraints, especially their impact on developing economies' financial health and resilience during crises, remains a critical gap in the literature (Beck, Levine, & Loayza, 2000). This calls for further investigation to provide actionable insights for policymakers aiming to strengthen financial systems and enhance SME access to capital in Nepal and similar economies.

The research identifies a gap in the existing literature by addressing the limited understanding of how financial constraints and market imperfections influence the interplay between internal and external financing decisions in Nepalese firms. Specifically, it examines the role of internal cash flows, capital expenditures, and collateralized assets in determining firms' reliance on external financing, while differentiating the financing behavior of small and large firms under financial constraints. By contextualizing global financial theories within Nepal's unique and evolving financial landscape, the study aims to provide nuanced insights into the challenges faced by Nepalese firms. Its findings will contribute to optimizing funding strategies, mitigating financial frictions, and informing policy measures to enhance capital access and foster sustainable growth.

The rest of this paper is structured as follows: Data is described in next section, following by the management of internal liquidity (cash flows and cash holdings) and credit multiplier effect. Section 3 produced the conclusion, implication and future research scope.

Data and Constraint criteria

The population of this study consists of 114 non-financial firms listed on the Nepal Stock Exchange (NSE) as of mid-July 2022. The primary objective is to identify the factors influencing external financing decisions. Financial firms are excluded from the analysis due to their distinct regulatory frameworks and their primary role as capital providers rather than seekers, resulting in financing behaviors that differ significantly from those of non-financial firms (Rajan and Zingales, 1995). In contrast, non-financial firms—operating in sectors such as trading, hydropower, manufacturing, and services—frequently depend on external financing for expansion, restructuring, and operational needs. This dependency aligns with the study's focus, enabling a detailed exploration of borrowing and equity issuance behaviors within a non-financial context. Including multiple non-financial sectors broadens the study's scope, capturing cross-industry variations and enhancing the generalizability of its findings.

In 2004, several prominent companies, including Nepal Doorsanchar Company (NDS) and Chilime Hydropower, went public by offering shares, marking a significant milestone in Nepal's financial landscape. This period was also characterized by increased economic liberalization, leading many companies to enter the public market to raise external financing. These events drew attention to the financial behavior of publicly listed firms in the country. Over time, the entry of new firms and the continued activity of existing ones in the public domain fueled researchers' interest in examining their financing patterns.
However, the analysis faced certain limitations. Firms were excluded if they lacked complete audit reports or publicly accessible data. Additionally, companies with less than 10 years of operation were omitted, as they could not provide sufficient historical trends for meaningful analysis. As a result, based on data availability and completeness, 19 firms were selected for this study, covering the period from 2004 to 2022.

Nepal, as an emerging economy with developing capital markets, offers a unique setting for examining external financing decisions. Despite its significant potential, research on the factors influencing external financing—through a combination of new debt and equity issuance—remains scarce in the Nepalese context. To analyze the influence of financial constraints on financing decisions, firms are categorized as financially constrained (FC) or unconstrained (UC) based on criteria like firm size, payout policy, liquidity, and the Hadlock-Pierce (HP) index, following prior studies (Cleary, 2006; Fama & French, 2002; Fazzari et al., 1988; Hadlock & Pierce, 2010). Firms exhibiting lower payout ratios, reduced liquidity levels, and higher HP index values are identified as financially constrained (FC), whereas firms demonstrating higher payout ratios, greater liquidity, and lower HP index values are categorized as financially unconstrained (UC).

Model specification

The study examines the influence of internally generated cash flows on external financing decisions, using firm size and growth opportunities as control variables. Larger firms, with easier access to capital markets, and firms with high growth prospects are expected to rely more on external funding. Equation (i) forms the baseline model for analyzing the impact of cash flow shocks on external financing:

$$EFi,t = a + b1CFi,t + b2Qi,t + b3FSi,t + \sum FIRMt + \sum YEARt + \varepsilon it \quad ---(i)$$

The model is extended in Equation (ii) to include cash holdings, asset tangibility, inventory, and leverage, with lagged variables controlling for the dynamic nature of external financing. This helps differentiate financially constrained and unconstrained firms:

$$EFi,t = a + b1CFi,t + b2Qi,t + b3FSi,t + b4CHt-1 + b5INVi,t-1 + b6\ PPEi,t-1 + b7DEi,t-1 + \sum FIRMt + \sum YEARt + \varepsilon it \quad \text{(ii)}$$

To capture the interaction between fixed assets and cash flow shocks, Equation (iii) is introduced:

$$EFi,t = a + b1CFi,t + b2Qi,t + b3FSi,t + b4\ CF\_PPE + \sum FIRMt + \sum YEARt + \varepsilon it \quad \text{(iii)}$$

A 5% cutoff is applied to external financing ratios, consistent with prior studies, to refine the sample for analysis. Fixed and random effect models are tested, with the Hausman test determining the suitable model. Definitions of variables are provided in the Appendix.

Data Analysis and Discussion

Summary Statistics of Financial Constraint

Table 1 provides a detailed summary of financial constraints among sample firms, divided into two panels. Panel A presents statistics for the entire sample, while Panel B focuses on the mean and standard deviation by constraint type within the subsample.

For the entire sample, the average (median) external financing value is 7.30% (4.80%), with values ranging from -2.70% at the lower percentile to 14.70% at the upper percentile. This suggests that most firms finance their total assets significantly through external sources each year.

Panel B highlights that external financing is notably higher in constrained firms, indicating their reliance on external sources.

Regarding cash flow, Panel A shows that it constitutes 28.70% (median: 24.90%) of total assets, with values varying from 7.20% at the 25th percentile to 50.40% at the 75th percentile. This wide variation (30%) suggests differing cash flow capacities across firms.

Panel B reveals that unconstrained firms experience higher cash flows compared to constrained firms, while constrained firms tend to have lower cash flows but higher growth opportunities.

Table 1

Summary Statistics of Constraint and Unconstraint firms

The table summarizes statistics for 19 non-financial firms listed on NSE from 2004 to 2022. Panel A covers the full sample, while Panel B presents means (M) and standard deviations (SD) for constrained (C) and unconstrained (U) groups. Key variables include external financing, cash flow, Q ratio, firm size (Lnsize), cash holdings, inventory, tangibility, and the debt-equity ratio. The full sample consists of 337 observations, with constraints classified by firm size (117), payout ratio (186), liquidity ratio (98), and HP index (171). The data are extracted form annual report of respective sample firms.

	Panel A				Panel B: Classified sample							
	Entire Samples			N= 337	Firm size		Dividend Payout		Liquidity		HP index	
Variables	M/SD	Median	25pct	75pct	M/SD (C)	M/SD(U)	M/SD (C)	M/SD(U)	M/SD (C)	M/SD(U)	M/SD (C)	M/SD(U)
EF	0.073	0.048	-0.027	0.147	0.095/	0.051/	0.089/	0.057/	0.082/	0.064/	0.106	0.039
	0.438				0.358	0.468	0.524	0.165	0.507	0.407	0.510/	0.347/
Cashflow	0.287	0.249	0.072	0.504	0.158/	0.342/	0.234/	0.392/	0.305/	0.279/	0.148	0.294
	0.300				0.310	0.278	0.311	0.245	0.332	0.286	0.273/	0.287/
Q	2.018	1.219	0.934	2.524	2.084/	2.011/	3.056/	1.494/	2.104/	1.811/	2.082	1.955
	1.801				2.051	1.687	1.197	2.289	1.375	1.947	1.763/	1.842/
LnSize	2.825	2.790	2.372	3.162	2.146/	3.115/	2.728/	3.017/	2.985/	2.758/	3.080	2.561
	0.618				0.215	0.493	0.523	0.738	0.474	0.658	0.643/	0.462/
Cashholdings	0.070	0.023	0.010	0.072	0.071/	0.069/	0.043/	0.124/	0.076/	0.067/	0.089	0.047
	0.114				0.148	0.097	0.080	0.148	0.124	0.110	0.134/	0.087/
Inventory	0.142	0.066	0.013	0.229	0.148/	0.140/	0.144/	0.138/	0.123/	0.150/	0.110	0.176
	0.198				0.296	0.137	0.220	0.146	0.137	0.219	0.144/	0.238/
Tangibility	0.522	0.466	0.246	0.770	0.532/	0.517/	0.591/	0.385/	0.546/	0.511/	0.508	0.535
	0.395				0.589	0.274	0.438	0.241	0.276	0.435	0.284/	0.484/
DE	1.849	1.312	0.438	2.394	2.032/	1.771/	2.261/	1.031/	1.721/	1.902/	1.534	2.173
	2.077				2.042	2.091	2.352	0.955	1.900	2.148	1.839/	2.256/

The percentage of inventory to total assets is slightly higher in constrained firms based on firm size and payout schemes but lower in those categorized by liquidity and HP index. It ranges from 1.3% to 23% across the first and third quartiles, with an average of 14.2%, indicating that Nepalese firms invest approximately 14% of their total assets in inventory.

Asset tangibility, measured by the ratio of fixed assets to total assets, is also slightly higher in constrained firms. The average tangibility is 52%, showing significant investment in fixed assets among sample firms. The debt-equity ratio averages 1.85 times (median: 1.31 times) across the sample, ranging between 0.44 times and 2.39 times in the first and third quartiles. This suggests that around two-thirds of total assets are financed through debt. Constrained firms rely more on leverage, as reflected in their higher debt-equity ratios.

External Financing and Financial Constraint

The study employed pooled OLS and fixed effect models, commonly used in panel data analysis due to their ability to handle heteroskedasticity (Fitzmaurice, Laird, & Ware, 2012). The Hausman test determined model selection by testing for correlation between unique errors and independent variables. Since the test's p-value was below 0.05, the null hypothesis was rejected, and the fixed effect model was applied.

Table 2 presents eight estimated equations analyzing firm efficiency under financial constraints. Control variables include cash flow, market growth opportunities, firm size, and firm and year effect dummies. For unconstrained firms, cash flows show significantly negative coefficients on external financing, with statistical significance at the 1%, 5%, and 10% levels across HP, size, payout, and liquidity criteria.

Table 2

Cash flow shocks of external financing: LSDV model

*Table 2 reports the results of least square dummy variable estimations (with year and firm fixed effects) for Nepalese non-financial firms (2004–2022) using NSE data. The Hausman estimator adjusts for heteroskedasticity and within-period error correlation. Statistical significance at 1%, 5%, and 10% is indicated by ***, **, and *, respectively. Key variables include EF (equity and debt changes scaled by total assets), CF (cash flow to total assets), Q (book debt and market equity to total assets), and firm size (log of sales). t-statistics are in parentheses.*

Dependent variable		Explanatory variables					
External Financing		CF	Q	Size	R^2	F	obs
Panel A : Payout ratio	Category						
Low Payout	C	-0.0873	-0.009	0.088**	0.41	3.71	186
		(-1.32)	(-0.41)	(-2.08)			
High Payout	U	-0.149**	-0.001	0.025	0.56	4.56	151
		(-2.39)	(-0.09)	(-0.72)			
Panel B: Firm size							
Small	C	-0.041	-0.017	0.047	0.52	3.18	117
		(-0.65)	(-0.63)	(-0.78)			
Large	U	- 0.229***	0.012	0.032***	0.52	5.86	220
		(-2.86)	(-0.51)	(-4.76)			
Panel C: Liquidity							
Less liquid	C	-0.028	0.069**	-0.0518	0.64	3.45	98
		(-0.42)	(-2.36)	(-0.48)			
More Liquid	U	- 0.108*	-0.027**	0.052*	0.52	6.08	239
		(-1.64)	(-2.25)	(-1.63)			
Panel D: HP index							
High	C	-0.1473	0.013	0.011	0.51	3.95	171
		(-1.52)	(-0.80)	(-0.23)			
Low	U	- 0.205***	-0.023	0.087*	0.53	4.08	166
		(-3.30)	(-1.11)	(-1.65)			

Constrained firms exhibit a weaker, statistically insignificant response, suggesting they rely more on external financing. Negative coefficients for investment growth opportunities in liquidity-based criteria indicate a reduced reliance on external financing, with less liquid firms being more sensitive to issuing new securities. Larger and lower-paying firms tend to issue external securities more frequently as they grow. These results align with explanations offered in existing literature. Financially unconstrained firms face lower external financing costs and enjoy better access to funding, as they encounter fewer issues with moral hazard or agency costs (Strebulaev, 2007). Consequently, their external funding is inversely linked to internally available cash flows.

In contrast, constrained firms experience greater information asymmetry, leading to higher costs and signaling challenges for outside investors (Myers & Majluf, 1984). Market frictions further limit their ability to adjust external financing as cash flow increases. The observed negative association between internal funds and external financing for unconstrained firms aligns with prior research (Almeida & Campello, 2010; Frank & Goyal, 2009; López-Gracia & Sogorb-Mira, 2014; Myers & Majluf, 1984).

Cash flow Sensitivity and External Financing

Table 3 analyzes extended cash flow sensitivity for non-financial firms, using interaction terms to test how explanatory variables impact external financing across constrained and unconstrained groups. The extended model incorporates cash flow, Tobin's Q, firm size, cash holdings, asset tangibility, inventory, and debt-equity ratio, with results consistent with prior research (Almeida & Campello, 2010; Denis & Sibilkov, 2010).

For unconstrained firms, cash flows are significantly and negatively linked to external funding across all categories. However, this sensitivity is insignificant for constrained firms, reflecting their higher external financing costs and lower likelihood of capital market adjustments. Constrained firms show higher cash flow coefficients (-0.031 to -0.76) than unconstrained ones (-0.15 to -0.52), supporting Modigliani and Miller's (1958) argument that internal funds do not significantly impact external financing for constrained firms.

Tobin's Q indicates mixed growth opportunities: constrained firms exhibit positive, significant coefficients in some criteria, while unconstrained firms reflect positive correlations, suggesting greater external financing for growth.

Firm size is positively linked to external financing for three out of four unconstrained classifications, aligning with trade-off theory, though most coefficients are insignificant. Larger unconstrained firms with high payout policies rely more on external financing to address funding

Table 3

Cash flow sensitivity of external financing

Table 3 estimates the cash flow sensitivity model for 19 Nepalese non-financial firms (2004–2022) with firm and year fixed effects. The Hausman test ($p < 0.05$) supports the fixed-effects model. EF (dependent variable) is equity and debt changes scaled by total assets. Other variables include CF (cash flow), Q (book debt and market equity), firm size (log sales), CH (cash holdings), PPE (property, plant, and equipment), DE (debt-equity ratio), and unreported firm/year dummies.

Dependent variable External financing		Explanatory variables							
		Cash flow	Q	Size	PPE	CF PPE	R^2	F-stat	Obs
Panel A: Payout policy									
Low pay firms	C	-0.172	-0.20***	-0.147**	0.037	0.014**	0.112	4.545	186
		(0.583)	(-2.614)	(-2.058)	(0.387)	(1.970)			
High pay firms	U	-0.324***	0.002	0.058	-0.004	0.004	0.078	0.168	151
		(4.286)	(0.023)	(0.666)	(-0.031)	(0.034)			
Panel B: Firm Size									
Small	C	-0.084	-0.31***	0.015	0.032	0.111**	0.116	5.05	117
		(1.222)	(-2.801)	(0.140)	(0.270)	(2.154)			
Large	U	-0.358***	0.017	-0.058	-0.107	-0.055	0.046	1.21	220
		(3.759)	(0.244)	(-0.781)	(-1.086)	(-0.594)			
Low	C	-0.096	0.34***	0.128	0.18	0.056**	0.142	4.757	98
		(-0.896)	(3.143)	(1.221)	(1.274)	(-2.414)			
High	U	-0.324**	-0.21***	-0.104	-0.176**	0.054	0.146	3.415	239
		(2.132)	(-3.166)	(-1.587)	(-2.411)	(0.795)			
Panel D: HP index									
High	C	-0.052	-0.001	-0.107	-0.246**	0.17*	0.053	1.767	171
		(-0.522)	(-0.006)	(-1.334)	(-2.259)	(1.642)			
Low	U	-0.191**	-0.073	0.037	-0.073	0.025	0.081	1.672	166
		(-1.967)	(-0.777)	(0.44)	(-0.65)	(0.27)			

*,**,*** denote 10%, 5% and 1% level of significance, values in parenthesis indicate the z-values, C=constraint firms and U=Unconstraint firms

deficits. Cash holdings are more responsive in constrained firms, with coefficients ranging from 0.172 to 1.023, compared to -0.081 to 0.80 for unconstrained firms. These results indicate that constrained firms rely more on cash reserves, while unconstrained firms leverage external funding for growth opportunities. Among the four constraint criteria, the coefficient of asset tangibility is positive and significant for small firms, suggesting that as firm size increases, smaller firms rely more on external financing. Coefficients for asset tangibility range from 0.054 to 0.142 for constrained firms and from -0.052 to 0.054 for unconstrained firms, indicating greater sensitivity in constrained firms.

Liquid assets (inventory) significantly impact external financing only under the HP index category. For constrained firms, every rupee of liquid assets is linked to up to 26 paisa of external financing, while other categories show inconsistent and statistically insignificant results.

The debt-equity ratio is complex due to its endogenous relationship with external financing, requiring careful analysis of its connection with cash holdings. In constrained firms classified by payout schemes, the positive coefficient indicates greater use of external financing for potential investments, though results are insignificant for other classifications.

F-statistics validate the fixed-effects model except in the small size category. The findings reveal a negative relationship between profitability and external financing for firms with low external financing costs. This relationship, however, is significantly weaker in constrained firms, diverging from the pecking order theory, which attributes higher external financing costs to constrained firms. These results align with prior studies (Almeida & Campello, 2010; Myers & Majluf, 1984).

Credit Multiplier and External Financing

This section analyzes the impact of the credit multiplier on external financing decisions for constrained and unconstrained firms. Firms with greater fixed assets are more likely to secure external funding, as these assets enhance their creditworthiness. This aligns with the "credit multiplier" effect in macroeconomics (Almeida & Campello, 2010; Bemanke & Gertler, 1989; Kiyotaki & Moore, 1997), where collateral mitigates financing constraints, enabling increased external investment.

Table 4

Cash flow sensitivity of external financing: Credit multiplier model

The table exhibits OLS regression results with year and firm fixed effects, estimating the credit multiplier for 19 Nepalese non-financial firms listed in NSE from 2004 to 2022. The model examines external financing (EF) as a function of cash flow (CF), firm size (FS), market valuation (Q), asset tangibility (PPE), and their interaction (CF_PPE), with firm and year fixed effects. EF is measured as the change in equity and debt relative to total assets, while CF includes net income and depreciation. The results differentiate between constrained (C) and unconstrained (U) firms, with t-values in parentheses.

Dependent variable External financing		Explanatory variables							
		Cash flow	Q	Size	PPE	CF_PPE	R^2	F-stat	Obs
Panel A: Payout policy									
Low pay firms	C	-0.172	-0.20***	-0.147**	0.037	0.014**	0.112	4.545	186
		(0.583)	(-2.614)	(-2.058)	(0.387)	(1.970)			
High pay firms	U	-0.324***	0.002	0.058	-0.004	0.004	0.078	0.168	151
		(4.286)	(0.023)	(0.666)	(-0.031)	(0.034)			
Panel B: Firm Size									
Small	C	-0.084	-0.31***	0.015	0.032	0.111**	0.116	5.05	117
		(1.222)	(-2.801)	(0.140)	(0.270)	(2.154)			
Large	U	-0.358***	0.017	-0.058	-0.107	-0.055	0.046	1.21	220
		(3.759)	(0.244)	(-0.781)	(-1.086)	(-0.594)			
Panel C: Liquidity									
Low	C	-0.096	0.34***	0.128	0.18	0.056**	0.142	4.757	98
		(-0.896)	(3.143)	(1.221)	(1.274)	(-2.414)			
High	U	-0.324**	-0.21***	-0.104	-0.176**	0.054	0.146	3.415	239
		(2.132)	(-3.166)	(-1.587)	(-2.411)	(0.795)			
Panel D: HP index									
High	C	-0.052	-0.001	-0.107	-0.246**	0.17*	0.053	1.767	171
		(-0.522)	(-0.006)	(-1.334)	(-2.259)	(1.642)			
Low	U	-0.191**	-0.073	0.037	-0.073	0.025	0.081	1.672	166
		(-1.967)	(-0.777)	(0.44)	(-0.65)	(0.27)			

Constrained firms, being more sensitive to credit effects, prioritize accumulating fixed assets to improve their financing capacity. Consequently, greater fixed asset investment strengthens the substitution effect, leading to a more negative association between cash flow and external financing. Table 4 highlights the negative significant impact of cash flow on external financing for unconstrained firms. Using a model based on equation III, asset tangibility is incorporated to evaluate internal and external financing via property, plant, and equipment. For firms with financial constraints, tangibility is positively associated with external financing, suggesting they rely on assets that can be used as collateral to improve creditworthiness. In contrast, for firms without such constraints, the relationship is negative, highlighting a preference for internal financing, consistent with the pecking order theory.

Conversely, the positive association aligns with the trade-off theory, which posits that firms balance the costs and benefits of external financing options. Table 5 provides estimation results for the credit multiplier regression specification, where the interaction between cash flow and property, plant, and equipment yields positively significant coefficients for constrained firms. In contrast, unconstrained firms exhibit minimal sensitivity to PPE.

For constrained firms, the interaction term of fixed assets with cash flow shows low but positive and statistically significant coefficients across models. Cash flow shocks for these firms are larger and significantly different compared to unconstrained firms, at 5% significance for the first three categories and 10% for the HP index.

Other variables, including size, asset tangibility, and Tobin's Q, produce results consistent with prior studies (Almeida & Campello, 2010; Campello & Hackbarth, 2012; Garcia & Sogorb, 2014). The positive CF_PPE coefficients suggest that firms with higher fixed assets are more inclined to use external financing to address information asymmetries and capitalize on investment opportunities. Constrained firms—typically smaller, younger, less well-known, and more default-risk-prone—rely on fixed assets to mitigate credit market challenges and support deficit financing.

Conclusion

The study provides empirical evidence on the relationship between internal financing (cash flow) and external financing (net debt and equity issuance). By using liquidity, firm size, payout scheme, and HP index as classification criteria for constrained firms, the study explores why firms with higher cash flow tend to use less external financing. The findings show that profitable firms generally rely less on external funding, aligning with prior studies (Frank & Goyal, 2009; Myers & Majluf, 1984). However, this study reveals an inverse relationship for firms less likely to incur high external financing costs, particularly small and less liquid firms. The results support previous findings (Almeida & Campello, 2010; Strebulaev, 2007) and suggest that financially constrained firms are more likely to seek external finance when facing cash flow disruptions. Additionally, constrained firms, which often experience financing shortfalls, are more sensitive to cash flow shocks, especially related to property, plant, and equipment, leading them to turn to external sources more frequently.

Managerial implications

This study provides a contribution to the literature by offering empirical evidence from Nepalese firms, an underexplored context in corporate finance research. Unlike prior studies that predominantly

focus on developed markets, this research investigates the interplay between internal and external financing decisions in an emerging economy characterized by distinct financial market frictions. The study highlights the nuanced role of financial constraints in shaping the cash flow-external financing relationship and uncovers the critical impact of asset tangibility and liquidity in determining external financing decisions. Additionally, it introduces the credit multiplier effect in the context of Nepalese firms, demonstrating how constrained firms leverage fixed assets to mitigate information asymmetry and secure external financing. These findings challenge conventional theories like the pecking order hypothesis by showing that constrained firms prioritize external financing during cash flow shocks. By extending the theoretical framework to emerging markets, the study broadens the understanding of financial behavior under varying economic and institutional settings, offering valuable insights for policymakers and practitioners.

Scope for future research

This study has limitations as it excludes government-owned public and unlisted firms in NEPSE and does not investigate how private small firms manage their financing. Future researchers can use criteria like asset tangibility, market-to-book ratio, interest coverage ratio, and the Whited-Wu index (Whited & Wu, 2006) to classify firms as constrained or unconstrained for similar research. The results are based on secondary data, and financial statements have inherent limitations. To enhance the study's credibility, conducting personal interviews and focus group interactions with firm management and potential investors can offer insights into the current situation and future financing trends. Qualitative research could provide valuable perspectives on the challenges faced by managers in handling external financing, making it a useful avenue for future researchers.

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Appendix

The appendix provides the definition of variables used in this study:
CFi,t = Cash flows (sum of net income and non-cash expenses) deflated by total assets of firm i in time t.
Qi,t = Tobin's Q = Market value of equity plus book value of debt divided by book value of assets of firm i in time t
FS i,t = Firm size = natural log of sales
CH i,t = Cash holdings scaled by total book value of assets
INV i,t = Inventory scaled by assets
PPE i,t = Property, plant, and equipment scaled by total book value of assets
DE = Total book value of Debt scaled by book value of equity
EF i,t = External financing is the ratio of net equity issuance plus net debt issuance scaled by total book value of assets of firm i in time t.
CF_PPE i,t = Interaction term of cash flow and property, plant, and equipment scaled by total assets of firm i in time t.

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