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THE ECONOMICS OF STARTUP BUSINESS FINANCE: AN INVESTIGATION THROUGH THE LENS OF FINANCIAL GROWTH CYCLE THEORY

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ABSTRACT

The provision of finance is the key to the survival and success of new firms. The current paper examines the startup firms' finance acquisition through the viewpoint of financial growth cycle theory. We used chi-square and Mann-Whitney U tests to examine our hypotheses. Our study uses data from 386 Indian startup entrepreneurs over the period 2019 – 2021. Our results show that the startups access angel finance significantly in the initial years and the venture capital, banks and NBFCs in their later stage of life. Our findings argue that Indian startups partially follow the financing patterns proposed by the financial growth cycle theory.

Keywords: Startup finance; Financial growth cycle theory; Indian startup entrepreneurs; Startup firm stages.
JEL Classifications: M13; G32; O16.

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I. INTRODUCTION

A startup is a new independent firm (Luger and Koo, 2005) that is set up to search for a scalable business model (Blank and Dorf, 2012) and that works towards the development of innovative products or processes with the potential to create wealth and employment (Startup India Scheme, 2021). Congruently, entrepreneurial researchers found that the startup activity creates jobs (Jáki *et al*., 2019) and impacts the country's economic development (Stel *et al*., 2005; Thurik *et al*., 2008). In fact, it is the startups that often bring some of the breakthrough technologies to the market rather than the established companies (Henderson and Clark, 1990; Tushman and Anderson, 1986). Startups considerably add to the innovation activity, and their contribution in some industries exceeds even that of large and mature companies (Hormiga *et al*., 2011). For the last twenty years, tech-based startups have been the drivers of employment openings, innovation, and economic progress (Coleman and Robb, 2012).

Despite their significant roles in the economy, they struggle to survive and succeed. Provision of finance is one of the startup success factors. Startup firms are significantly characterized by unconventional business models, information asymmetries, risky projects, high failure rates, no track record or financial history, lack of collateral, and uncertain cash flows, which generally makes them unappealing to the financiers. These factors not only make external investors mainly unwilling to invest in startups but also elevate the cost of finance for the startups if the funding opportunity is available. Therefore, the majority of the startup entrepreneurs struggle to finance their business and tend to rely heavily upon the personal funds and funds from their immediate circle of friends and family members, which is often limited and not sufficient (Mustapha and Tlaty, 2018). Consequently, examining how startups raise finance has always been a question of much interest to entrepreneurial researchers.

Given the significance of the startup financing dynamics, most startup finance researchers (for example, Söderblom and Samuelsson, 2014) usually discuss pecking order theory and financial growth cycle theory as prominent theories. Though pecking order theory (Myers, 1984; Myers and Majluf, 1984) was initially proposed for the case of established firms, later finance researchers began to apply it to the financing decisions of small firms and startups too. According to the pecking order theory, managers/entrepreneurs follow a hierarchy in choosing funding sources to finance their firm's operation. First, they prefer to raise internal funding in the form of equity (retained earnings) and then choose to raise external debt rather than external equity once it is exhausted. In other words, they prefer internal equity over external debt and external debt over external equity. External equity emerges as the last resort for their firms to raise money. The associated cost of finance and risk also increases in the same order. The concepts of adverse selection and moral hazard issues that stem from the information asymmetry explain the reason backing such behavior of entrepreneurs. Owing to information problems present between entrepreneurs and potential investors, firm's investors demand higher premiums for their stakes, and this makes external funding costlier for the firms.

However, we confine our research to the Financial Growth Cycle Theory (FGCT), the most cited theory concerning the startup firm's financing decisions

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proposed by Berger and Udell (1998). They hypothesize that small firms highly depend on owner funds, funds from friends and family members, trade credit, and/or angel finance when they stay nascent, minute, and informationally vague, while they gain access to external debt and equity such as venture capital and loans from banks and/or Non-Banking Financial Companies (NBFCs) once they begin to progress through their life cycle. If the firms survive and show further development, they raise funds from public debt and equity markets.

However, the entrepreneurial finance landscape is advancing with the time, and we feel that there is a need to revisit the financial growth cycle theory. This theory was proposed two decades ago, yet the empirical evidence arguing in favor or not in favor of FGCT in the literature has been limited and primarily confined to small-to-medium enterprises (Bhaird, 2010; Gregory *et al*., 2005; Ciarán Mac an Bhaird and Lucey, 2011; Sánchez-Vidal and Martín-Ugedo, 2012; Walid, 2019) and sometimes to public/listed companies (Bulan and Yan, 2009; Upneja and Dalbor, 2000) that basically differ from startup firms that are characterized by innovation and scalable business models. A few researchers, particularly those carrying out studies utilizing Kauffman Firm survey data (for example, Farhat and Cotei, 2016), have reported that this theory is suitable for startups. Nevertheless, to our knowledge, no study so empirically examined the FGCT, which has relevance for startups, particularly in the case of a developing economy with the evolving entrepreneurial finance landscape.

More specifically, our motivation to investigate the application of FGCT in a country-specific context like India comes from the fact that the number of startups newly added to the ecosystem every year has been rapidly increasing since the inception of the startup Indian program, and recently India has emerged as the third largest startup ecosystem in the world after US and China (Economic Survey of India 2021-22). The equity financing markets, such as angel finance and venture capital, are still evolving in the Indian context compared to the US and other developed countries. Moreover, the institutional practices, tax regimes, and exit options available to equity investors that greatly influence investor behaviors vary across countries (Drover *et al*., 2017). Consequently, we expect our research to offer different results than existing studies.

In this backdrop, we aim to investigate the financing decisions of Indian startup firms through the lens of FGCT. Compared to a few studies undertaken to test the financial growth cycle paradigm in the setting of startup firms (Cotei and Farhat, 2017; Farhat and Cotei, 2016; Ciarán Mac an Bhaird and Lucey, 2011), we adopt a unique yet simple methodology to achieve our aim. Rather than resorting to some startup databases, we utilized dichotomous and continuous financing data extracted from our survey designed for realizing our research objective. Unlike the previous research, we followed stage (age) wise classification of firms across the life cycle. Based on FGCT, we hypothesize stage-wise dominance of financing sources. Notwithstanding what we expected, we find that the reported firms do not employ trade credit and friends and family funding prevalently in their initial stage. Moreover, our results revealed that the startups tend to use angel finance more likely in the later stage than the initially assumed initial stage. On the other hand, following the FGCT, our results highlighted that the startups heavily rest on the venture capital, loans from banks, and NBFCs in their later stage. Overall,

the results suggest that the Indian startups partially follow the financing patterns of FGCT.

The rest of the paper is organized as follows. Section II provides a discussion on the methodology, the sampling and data collection procedures employed, and the variables and their measurement. Section III elaborates on the financing sources for the small firms according to the financial growth cycle theory, along with the arguments developed and empirical results found from the previous research work. Section IV provides discussion on our research hypotheses based on the work of Berger and Udell (1988). The second last section presents our research findings followed by concluding remarks in the final section.

II. METHODOLOGY

For the purpose of our study, we procured the list of entities recognized as startups as part of the startup India program instigated by the government of India in 2015 to strengthen the country's startup ecosystem. The Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry, monitors the startup India program. Under this program, according to DPIIT, the startup is an independent business entity which is incorporated in India as a partnership firm or limited liability partnership or private limited company having age not beyond ten years from its registration, whose turnover has not exceeded ₹100 crores in any of the previous financial years, working towards the development of innovative products or processes with a scalable business model having the potential to create wealth and employment.

The list obtained on the startups is in the order of receiving recognition from the DPIIT. We randomly selected more than 1000 startups from the list, gathered basic information pertinent to startup firms and their founders such as incorporation year, type of business form, registered address, contact numbers, e-mail details through various publicly available online resources like startupindia.gov.in, startup's own website, founder's LinkedIn accounts, crunchbase.com, zaubacorp.com, mca.gov.in, etc. We then contacted the startup entrepreneurs representing the startups using their emails ids, LinkedIn accounts, and mobile WhatsApp, and sent them the google form link wherein the online questionnaire with the necessary introduction text and research supervisor's recommendation letter. We presented the structured questionnaire in their offices for a few startup entrepreneurs after obtaining their appointments well in advance. The period of the data collection was from 2019 to 2021.

Overall, more than 390 entrepreneurs all over India responded to the survey and after removing problematic cases, 386 responses finally qualified to be included for the purpose of this study. We heavily relied on financing sources consistent with the predictions of FGCT. We intentionally excluded own funds from our main analysis since only five of our sample firms reported that they are non-users of their funds. We did this to avoid the subsequent problems associated with getting expected counts less than five in the cross-tabulation of chi-square analysis. Instead, we considered the proportion of owners' contribution to the total capital raised and diversity in finance. We omitted a few other financing types from our work, such as public debt/equity or commercial paper, because of

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their insignificance to our sample firms. All the financing related variables except the proportion of owner funding to the total financing and financial diversity utilized in our research are dichotomous (yes/no type). A detailed description of the variables and their coding is provided in Table A of the Appendix..

We closely followed the work of Berger and Udell (1998) and divided our firms into two groups, initial stage startups (0-2 years) and the later stage startups (3-10 years). The initial stage is where firms remain nascent, small in size with almost no collaterals, and informationally more opaque. The later stage is characterized by growth in the business with some level of collateral and track record. We computed the age by taking the firms' incorporation date, and the date startup entrepreneur responded to our survey. This method of determining the firm's age can overcome the setback of arriving at highly inaccurate data that is more subjective to entrepreneurs' guess if they are asked to answer otherwise. We executed the chi-square analysis and Mann-Whitney U-test to examine our hypotheses.

III. FINANCIAL GROWTH CYCLE THEORY AND THE REVIEW OF RELEVANT FINANCING SOURCES FOR THE STARTUP FIRMS

According to Berger and Udell (1998), initial insider finance is the preliminary funds that the founders and their circle of friends and family members contribute to the firm during its foundational period. They also argue that insider finance is crucial at the very initial and startup stages of the life cycle as the firms are mostly informationally opaque, and it is a necessary condition to minimize the severity of moral hazard and adverse selection problems which the external investors carefully account for before making their investments. Though the usage of friends and family funds is significant in India, where our sample firms also come from, this funding comes with the demerit that more uncertainty is attached to the fund size that can be raised and also repayment terms (Vandenberg *et al*., 2020).

Berger and Udell (1998) state that next to the initial insider finance, the trade credit remains the vital source of finance on the debt side for the startup firms. Trade credit is a traditional and commonly used financing source for startups (Seghers *et al*., 2012). Like bank finance, trade credit is also a formal type of finance (Tariq, 2013) that meets a part of a startup firm's working capital requirement without pledging any security (Elomo, 2014) but is often said to be costlier than the bank credit, particularly when the firm does not make the payment within the time mentioned by the supplier (Petersen and Rajan, 1997). Berger and Udell (1998) assert that the trade credit meets the small firms' financing needs to which the financial institutions do not pay much attention, while the mature firms stand less opaque, maintain good relationships with the financial institutions, and consequently show less dependence on the trade credit. Overall, arguments largely support the view that bank credit and supplier credit are substitutes rather than complements.

FGCT assumes that, on the external equity part, angel finance and venture capital are the next financing alternatives for the startups after initial insider finance and trade credit. Concerning the prominence of angel finance, Freear and Wetzel (1990) offered that the business angels were the largest providers of equity capital next to the initial insider finance, the role of the business angels and venture

capitalists in funding the technology-based firms was complementary in terms of the firm's stage and investment size rather than competing. This observation appears very similar to the claim made by Mason and Harrison (2008) that, after friends and family, business angels significantly contribute the external finance for the startup stage firms, their investments fill the industry, stage and size-specific gaps unfulfilled by the venture capitalists, and they only provide the risk capital in many territories. Venture capital remains the succeeding external equity funding option after the angel finance**.** Firms usually receive venture capital after acquiring one or more rounds of angel finance.

On the external debt part, banks and non-banking financial companies finance the startups in their later stage of development. Banks and non-banking financial companies differ in their lending patterns. Firms, especially those that aim for growth, prefer debt finance other than bank credit if available and is believed to assist in achieving the growth despite its high cost (Korityak and Fichtel, 2012), and this supports the Berger and Udell (1998) point that the financing companies fund firms that are relatively riskier than the firms that receive bank credit. The issues in startup firms' access to bank credit include low credit scores (Cole and Sokolyk, 2018), high failure rates in the industry (Huyghebaert *et al*., 2007), and firm's poor reputation (Diamond, 1989). FGCT distinguishes that the startup firms from high growth and high-risk sectors raise external equity funds from business angels and venture capitalists while their counterparts from low-risk sectors raise debt from banks and finance companies.

IV. HYPOTHESIS DEVELOPMENT

As postulated by FGCT, the nascent firms that stay tiny and without the ability to offer any guarantee to compensate the default risk of the investors who supply the capital to them tend to utilize the initial insider finance primarily. The firms usually require the initial insider finance in their early stage, often characterized by the product or business idea development and largely with no tangible assets. Insider finance may be again needed in the startup stage when the firm commences the production in small quantities with some degree of marketing effort. In this stage, the firm designs its business plan and uses it to receive the angel finance as a sales document. Berger and Udell (1998) argue that being minute, nascent, and informationally opaque, overall, the firms need to depend on initial insider finance, angel finance, and trade credit before showing further progress in their life cycle. As the firms grow into the later stage, they finance their full-size production and marketing by acquiring venture capital once their product passes well through the test marketing. On the debt side, they also gain access to bank and NBFC loans when they expand their production base, and their balance sheets have a significant level of tangible assets that can be served as collateral to the financial institutions. The proportional intensity of information problems such as costly state verification, moral hazards, and adverse selection explains why some of the small firms gain access to external equity like angel finance and venture capital while others raise debt from banks and financial companies. Therefore, following the FGCT of Berger and Udell (1998), we propose to examine following eight hypotheses:

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H1: The usage of friends and family member funding is associated with the initial stage of the startup firms
H2: The usage of angel finance is associated with the initial stage of the startup firms
H3: The usage of trade credit is associated with the initial stage startups
H4: The usage of venture capital is associated with the later stage of the startup firms
H5: The usage of bank business credit is associated with the later stage of the startup firms
H6: The usage of NBFC business credit is associated with the later stage of the startup firms
H7: The level of owners' funding in the total capital raised is higher in the initial stage of the startup firms than in their initial stage
H8: The financial diversity of startup firms in their initial stage is lower than in their later stage

V. EMPIRICAL FINDINGS

Above 90 percent of survey responses are received from male startup entrepreneurs. Married entrepreneurs, entrepreneurs who belong to the 25-34 age group, and those with post-graduation qualification dominate the sample respondents. Table 1 shows that over 80 percent of firms are private limited companies, indicating higher compliance requirements and more flexibility regarding raising equity from business angels and venture capitalists. Most startup firms have six to twenty employees, presenting them as medium size firms. Around one-tenth of startups only employ people more than 20. Higher than 50 percent of startup firms engage in offering product as well as service. An almost equal number of startups are going through the initial and later stages. Many startups possess a proportion of one to ten percent fixed assets to the total assets, showing less chances for them to receive debt from financial institutions like banks or NBFCs.

Table 1.
Startup Firm Characteristics

The table presents the frequencies and their corresponding percentages of startups presented across essential firm characteristics.

Startup Firm's Characteristics by Classification		No.	Percent
Form of business organization	One person company	15	3.9
	Limited liability partnership	47	12.2
	Private limited company	324	83.9
Number of employees	1-5	168	43.5
	6-20	175	45.3
	Above 20	43	11.1
Firm's offering	Product	66	17.1
	Service	112	29.0
	Product and service	208	53.9
Startup firm stages	Initial stage	190	49.2
	Later stage	196	50.8
% of fixed assets in the total assets	1-10	226	58.5
	11-20	66	17.1
	Above 20	94	24.4

Table 2 presents the frequencies of various financing sources currently used by the startups. The grand total of firms using particular financing sources exceeds our sample total of 386 firms, as some of the reported firms are using more than one financing source.

Table 2.
Sources of Finance for the Startups

The table presents the frequencies and their corresponding percentages of startups relying on each source of finance.

Type of Finance	No. Firms Using (N = 386)	%
Own funds	381	98.7
Friends and family funds	208	53.9
Angel finance	63	16.3
Trade credit	88	22.8
Venture capital	23	6.0
Business loan from banks	86	22.3
Business loan from NBFCs	36	9.3

Table 2 reveals that the owner funds emerged as the most dominant financing alternative for the startup firms, followed by the informal funds in the form of debt or equity offered by the entrepreneur's friends and family members, consistent with the work of Vandenberg *et al*. (2020). It means that insider finance is the major source of finance for startup firms and this trend appears to be very much similar to the past research findings. The trade credit and business loans from banks with a marginal difference of 0.5 per cent occupy the third and fourth places, respectively. It implies that the firm's suppliers and the banks are almost equally extending the

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credit support to the startups. It is also observed that the position of trade credit in entire financing is the same as reported by Robb and Robinson (2010 and 2014) that the trade credit settles in the third spot, after the bank loan and owner equity, but before the outsider equity such as angels and venture capitalists.

Moreover, it is noted that the trade credit is the third-largest availing financing source for the startups in 2004, of the Kauffman survey (Chavis *et al*., 2011). The usage of owner funds and bank loans by the percentage of startups is almost like Italian technology-based startups (Colombo and Grilli, 2007). The angel finance and the business loans from NBFCs are the next leading financing avenues. Venture capital is the least used financing possibility for startup firms. On the external debt side, suppliers (trade credit as short-term financing), banks and NBFCs play a crucial role, whereas angel investors and venture capitalists mainly participate on the external equity side. External business debt is more prevalently employed than external equity by startup firms. Overall, insider finance, followed by the external debt and the external equity, basically fund the startup firms.

We test our hypotheses using the chi-square and Mann-Whitney U-test at the 95% confidence interval, and the summary of hypotheses testing results is provided in Table 10**.** Our data from the survey are independent and no cell in the contingency tables has expected counts less than five, fulfilling the necessary assumptions of the chi-square test. We preferred the Mann-Whitney U-test over the independent samples *t*-test to verify the last two hypotheses as our data did not meet the assumption of homogeneity of variance.

Our first hypothesis was that the acquisition of funds from an entrepreneur's family members and friends is related to the initial stage of the startup firm. Contrary to our expectation, we found no evidence to reject the null hypothesis that there is no association between using funds supplied by the entrepreneur's friends and family and the initial stage of the startup firm as the chi-square test statistic is found to be statistically insignificant. This finding differs from the FGCT's assumption that the nascent firms considerably lean on the initial insider finance, which is, in part, constituted of funds from friends and family.

Alternatively, we also examined the outcome by including the initial insider finance, a combination of owner funds and friends and family funds conceived by Berger and Udell (1998) in our analysis, yet the result is statistically insignificant ($\chi 2(1) = 0.185, p = 0.667$). Emphasizing the fact that the friends and family funding with its presence in almost 54 per cent of firms occupied the second-highest position after the own finance and, more surprisingly, its usage was precisely the same (104 startups in each stage) in the initial stage as well in the later stage startups, it may be concluded that the startup firms avail friends and family funds or even initial insider finance independent of stages. The result also indicates that the funds offered by friends and family members to the startup firms in their early stage may be still in use in their later stage.

Our result is inconsistent with the findings of Cotei and Farhat (2017) and Farhat and Cotei (2016), who examined the financing patterns of the US startups over the period 2004 to 2011 and whose results basically support the FGCT's assumptions. Their study discloses that the new firm's dependence on funds from friends and family members declines over time. Similarly, Bozkaya and van Pottelsberghe de la Potterie (2008) surveyed the financing sources used by the Belgium startup

companies across the seed, startup, early growth and development stages. Their results reveal that the own funds and friends and family funds significantly dominate the financial structure in the initial two stages than in the later stage but our findings mainly disagree with this.

Probably, one reason underlying our result is that irrespective of their stage, a large number of firms may have more information opacity (one of the considerations of FGCT) or might possess high specific assets in terms of entrepreneur's industry experience and business knowledge as a reason for opting more likely self-finance and friends and family funds to finance the business operations as argued by Mann and Sanyal (2012) who investigated the financing decisions of the US startups at their inception. Subsequently, startup entrepreneurs may be fulfilling the funding requirements that the other financiers do not meet. Therefore, we argue that the initial insider finance is not only crucial in the early stages (Bădulescu, 2011; Mann and Sanyal, 2012) but also it may be important in the later stages when the firms still remain, for the most part, informationally opaque. The more convincing reason underpinning our result may be our methodological approach. We considered whether a particular source is present in the firm rather than the extent of presence except in the case of owner funding.

Testing of our second hypothesis revealed the association between the infusion of the angel funds and the initial stage of the startups with $\chi 2\ (1) = 9.201$ and $p = .002$. However, the negative standard residual, -2.0, which was significant at a 95 per cent confidence level and emerged as a solid contributor to the overall association, indicates that a substantially lesser number of initial stage startups were actually using angel finance than what was expected if the angel fund injections and initial stage of startups were not associated. Conversely, surpassing the expected figure of 32, 43 startups were financing their later stages with angel finance. Therefore, from table 3, it is evident that the angel finance usage negatively ties with the initial stage while positively linking with the later stage of the startup firms. In other words, firms are less likely to receive angel funds in the initial stage, while the likelihood of receiving the same in the later stage is considerably more.

Table 3.
Angel Finance Usage by Startup Firm Stage with Observed and Expected Counts

The table presents the startups' usage of angel finance in their initial and later stages of the life cycle. The standardized residuals associated with the cross-tabulation is reported in parentheses.

Usage of Angel Finance	Stage of the Startup		Total
	Initial	Later	
Yes	20	43	63
	31	32	
	(-2.0)	(1.9)	
No	170	153	323
	159	164	
	(0.9)	(-0.9)	

This finding disagrees with the FGCT's hypothesis that the new and tiny firms heavily use angel funds in their earliest stage but in part accord with what Harrison

et al. (2010) found after studying 373 investment deals made by 109 angel investors in the UK that the business angels have vigorous interest to invest in early-stage, startup stage, and expansion stage firms and have a less strong interest to invest in seed-stage firms. The reason underpinning our results may be that the firms are resorting to angel funds as a substitute for venture capital funds, justifying the thought that the business angels fill the industry, stage, and size-specific gaps unfulfilled by the venture capitalists as offered by Wetzel (1987) and Mason and Harrison (2008).

Regarding availing trade credit and stage of the startup firm, the hypothesis that the usage of trade credit is associated with the initial stage startups is rejected because we gained confidence in the null hypothesis with the *p*-value of 0.125**.** It shows that the firms resort to trade credit irrespective of their stage of life, reinforcing the findings of Hogan *et al*. (2017), who show that the trade credit is used in the early and later development stages of the small firms, and strongly confirming the results of Chavis *et al*. (2011) who find no relationship between firm's age and use of trade credit. The results infer that the firms are largely not trade credit constrained (Cole and Sokolyk, 2013).

Coming to the support of venture capitalists in the later stage of the startup firms, we find evidence in favour of our hypothesis formulated in tune with the FGCT that the venture capital usage is associated with the later stage of the startup firms ($\chi 2 = 5.238, p = 0.022$). From Table 4, it is also evident that the later stage startups that the venture capitalists actually back are more than the expected (the positive sign of the residual confirms the same) while, on the other hand, only around 50 per cent of the estimated initial stage startups are using venture capital in reality. In other words, it is said that the venture capital usage is less in the initial stage and more in the later stage of the startup firms. Overall, the venture capital investments positively attach (but the association is weak as indicated by the residual of 1.6) with the later stage of the startups, which agrees with the opinion of Tariq (2013).

Table 4.
Venture Capital Usage by Startup Firm Stage with Observed and Expected Counts

The table presents the startups' usage of venture capital in their initial and later stages of the life cycle. The standardized residuals associated with the cross-tabulation is reported in parentheses.

Usage of Venture Capital	Stage of the Startup		Total
	Initial	Later	
	6	17	23
Yes	11.3	11.7	
	(-1.6)	(1.6)	
	184	179	363
No	178.7	184.3	
	(0.4)	(-0.4)	

Bank loans reported by our respondents are business loans secured from banks, excluding their personal bank loans. The positive relationship between availing bank loan and the later stage startups is confirmed by the $\chi 2$ value of 9.103 and

p-value of 0.003, which is less than 0.05. The cross-tabulation between them (see Table 5) discloses that using bank loan is significantly prevalent in the later stage, and at the same time, it is less in the initial stage of the startup firms. The FGCT holds good in the context of our startups in case of accessing bank loans by the startup firms in their later stage. Our results also confirm the arguments that the small firms, over time, grow in size (Cole, 2010), become less opaque (Farhat and Cotei, 2016), and improve their creditworthiness as they progress through their life cycle, and consequently begin to replace internal finance with the external finance like bank loan (Abdulsaleh and Worthington, 2013).

Table 5.
Bank Loan Usage by Startup Firm Stage with Observed and Expected Counts

The table presents the startups' usage of bank loans in their initial and later stages of the life cycle. The standardized residuals associated with the cross-tabulation is reported in parentheses.

Usage of Bank Loan	Stage of the Startup		Total
	Initial	Later	
	30	56	86
Yes	42.3	43.7	
	(-1.9)	(1.9)	
	160	140	300
No	147.7	152.3	
	(1.0)	(-1.0)	

Table 6.
NBFC Loan Usage by Startup Firm Stage with Observed and Expected Counts

The table presents the startups' usage of NBFC loans in their initial and later stages of the life cycle. The standardized residuals associated with the cross-tabulation is reported in parentheses.

Usage of NBFC Loan	Stage of the Startup		Total
	Initial	Later	
	11	25	36
Yes	17.7	18.3	
	(-1.6)	(1.6)	
	179	171	350
No	172.3	177.7	
	(0.5)	(-0.5)	

Like in the case of bank loan, our hypothesized relationship between NBFC loan and the later stage of the startup firms is evident from the $\chi 2$ value of 5.535 and *p*-value of 0.019. However, this relationship is found to be weak. This result is consistent with the expectation of FGCT.

We attempted to advance our results by considering the quantitative financing measures such as the proportion of owner/s' funding to the total capital invested in the business and the diversity of funding sources used by the startups across their stages of life. We performed the Mann-Whitney U test to verify our last two hypotheses and the results obtained such as ranks, test statistics, and medians

along with ranges are provided in tables 7, 8, and 9 respectively. Despite 98.7% of the total entrepreneurs reporting that their firms are using their funds either in full or part, results show that the share of owner/s' funding in the total fund raised by the startup firms was significantly higher in their initial stage *(Mdn = 85.00)* than in the later stage *(Mdn = 60.00), U = 14698.00, z = -3.651, p = .000.* We calculated the effect size (r) based on the formula suggested by Rosenthal (1991), which was -0.186, indicating a small effect.

Table 7.
Mann-Whitney U-Test Rank Details

The table presents the frequencies and the rank details produced by the Mann-Whiney U-test for initial and later-stage startups concerning the proportion of own funding and funding diversity.

	Startup Firm Stage	N	Mean Rank	Sum of Ranks
Percentage of owner/s' to the total funds	Initial	190	214.14	40687.00
	Later	196	173.49	34004.00
	Total	386		
Funding diversity	Initial	190	174.72	33196.50
	Later	196	211.71	41494.50
	Total	386		

Table 8.
Mann-Whitney U-Test Statistics

The table presents the test statistics and significance values regarding the proportion of owner funding in the business and the funding diversity.

	Percentage of Owner/s' to the Total Funds	Funding Diversity
Mann-Whitney U	14698	15052
Wilcoxon W	34004	33197
Z	-3.651	-3.389
Asymp. Sig. (2-tailed)	(0.000)	(0.001)

Table 9.
Medians and Ranges for the Level of Owners Funding and Funding Diversity Across the Startup Firm Stages

The table presents the medians and ranges of the owner/s' funding proportion and the funding diversity over the initial and later stages of the startup firms.

	Stage of the Startup Firm			
	Initial		Later	
	Median	Range	Median	Range
% of owner/s' contribution to the total funding	85.00	95.00	60.00	100.00
Funding diversity	1.00	5.00	1.00	6.00

Table 10.
Summary of Hypotheses Testing Results

We did not report the continuity correction value, which is computed for 2x2 tables and its corresponding significance value as it overcorrects as indicated by FIELD (2009), and we inform that even those significance values were found to be below 0.05.

Hypothesis	Test Statistic (*P*-value)	Accepted/ Rejected
The usage of friends and family member funding is associated with the initial stage of the startup firms	0.109 (0.741)	Rejected
The usage of angel finance is associated with the initial stage of the startup firms	9.201 (0.002)	Accepted
The usage of venture capital is associated with the later stage of the startup firms	5.238 (0.022)	Accepted
The usage of bank business credit is associated with the later stage of the startup firms	9.103 (0.003)	Accepted
The usage of NBFC business credit is associated with the later stage of the startup firms	5.535 (0.019)	Accepted
The usage of trade credit is associated with the initial stage startups	2.349 (0.125)	Rejected
The level of owner/s' funding in the total capital raised is higher in the initial stage of the startup firms than in their initial stage	3.973 (0.000)	Accepted
The financial diversity of startup firms in their initial stage is lower than in their later stage	-3.573 (0.000)	Accepted

Regarding the funding diversity, results suggest that notwithstanding the same median values *(Mdn = 1.00)* present across the startup stages. The level of diversity in the funding sources used by the startup firms is significantly different between their early and later stages (U= 15051.50,z=-3.389,p=0.001,r=-0.172). The difference is evident as reported in Table 7 which shows that the funding variety is greater in the later stage *(mean rank, 211.71)* of the startup firms than in their initial stage *(mean rank, 174.72)*. Overall, the results suggest that the financing diversity and the size of the external funding, either in the form of debt or equity, increase as the startups advance their life cycle.

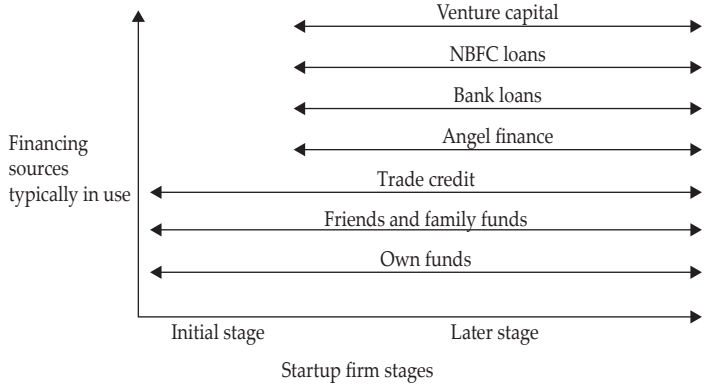
This observation complements our previous understanding with regard to the presence of own funding and confirms the FGCT's assumption that the startups in their nascent stage heavily draw the necessary finance from the founding team and gain access to the external funding sources once they become mature and informationally less opaque. Based on the work of Mann and Sanyal (2012), we expect that the funding provided by friends and family members with its presence equal across the stages (104 startups in each stage) and its distinction from owner funding sometimes being not clear may also follow the same trend which we could find concerning the proportion of owners' funding, but unfortunately, our data set does not allow us to test our first hypothesis using the continuous data. Nevertheless, not only the level of a firm's dependence on a specific source of finance but firm's access to a particular source of finance (which results in binary data) is also an essential aspect of Berger and Udell's (1998) FGCT, which is worthy

of empirical verification. Since the firm's funding diversity and proportion of external funding are significantly higher in the later stage than in the initial stage, we still argue that our results are dependable about the other external funding sources, from supplier's trade credit to NBFC loans.

In summary, startup businesses showed their consistent dependency on the informal funds provided by the entrepreneur's immediate connections such as friends and family members and the trade credit extended by the supplier in their initial stage as well as in the later stage. On the other hand, they employ angel finance, venture capital, and business loans from banks and NBFCs, predominantly in the later stage of the life cycle. Startups heavily depend on owners' funding in their initial stage than in the later stage, wherein the funding diversity and thereby the extent of external funding is higher than in the initial stage.

Figure 1.
Startup Financial Development Cycle

Though the presence of owner funds is found almost in all startups, it is employed significantly in the initial stage rather than the later stage of the firm's life.



VI. CONCLUSION

In accord with the arguments of FGCT, startups resort significantly to the funds contributed by the startup entrepreneur(s) in their initial years. That declines once the firm's financing diversity and the following external funding share enhance in their later years. The funding support extended by the startup entrepreneur's close circle of family and friends and the usage of trade credit is observed independent of the startup firm stages, whereas the application of angel funds is found less likely in the initial stage while more likely in the later stage. This inference is against the FGCT's notion of a startup firm's heavy reliance on friends and family funds, angel funds, and trade credit in the initial stage rather than the later stage. Nevertheless, consistent with the FGCT's arguments, we document that the debt procurement in the form of business loans from banks and NBFCs and equity injections from the venture capitalists are significantly associated with the later stage of the startup firms. Berger and Udell (1998) suggest that the beginning and ending points of utilizing financing sources by the startups in the firm's development cycle may

be suggestive rather than precise. Moreover, they propounded that their premise holds not for all the small firms but for the firms for which the firm's age, size, and information opacity are exactly synchronized. After all, it is established that the Indian startup business financing decisions go partially along with Berger and Udell's (1998) financial growth cycle paradigm.

Our results contribute to the growing body of literature on entrepreneurial finance in general and the applicability of financial growth cycle theory in particular by joining the previous studies carried out by Gregory *et al*. (2005) and Sánchez-Vidal and Martín-Ugedo (2012) in the case of the US. and Spanish SMEs contexts, respectively. Their findings, as in our case, do not entirely support the propositions of FGCT. Though the various findings broadly agree or partially disagree with the predictions of FGCT, they stand unique at the micro level owing to differences concerning the country's economic setting, sample surveyed, and methodology adopted.

India is one of the fastest growing economies in the world, with over 65 percent of its population being the youth, increasing smartphone users, more government initiatives, and a growing number of startups newly added to the ecosystem, making it more attractive to the investors. The recent growing investments of angel investors and venture capitalists in terms of numbers of deals made and amount of funds invested, and increased credit supply from banks and especially NBFCs with the emergence of financial technology firms in the Indian economy reflect our observation about the availability of equity and debt sources for the startups in their later stage. Over 80 % of our firms are private limited companies, reflecting the most encouraged form of business in India and with flexibility regarding raising angel finance and venture capital. Additionally, the Indian economy, in recent years, witnessed an increasing number of incubators and accelerators financially backing early-stage startups. We expect that this might be one of the reasons why our sample firms access angel funds in the later stage rather than in the initial stage.

What our research should offer as an implication to the startup entrepreneurs is that the results show that the owner funds followed by the funds from friends and family emerged as the major sources of finance for the Indian startups, but friends and family funds come with some disadvantages which the startup entrepreneurs are assumed to deal with effectively to overcome them. The primary one is to execute written contracts with friends and family members who offer funds regarding the repayment terms or offer an ownership stake in the firm as a reward for the commitment of their funds. Others may include managing the stress that comes from implied pressure that entrepreneurs undergo to succeed as quickly as possible to give their loved one's money back and taking steps to manage appropriately family members' or friends' interference in the firm's business decision making. In this regard, for the entrepreneurs who seek capital from friends and family, we also present the suggestion offered by the US Small Business Administration below. "*Don't just turn to Dad or your best friend because that's who you know. Select someone with solid business skills who knows the risks and benefits of what they are getting into. Remember, if your business doesn't work out and you can't repay your obligations, relationships will suffer. At the very least, narrow your list down to friends or family who have faith that you will succeed, who understand your*

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plans and are clear about the risks" (Small Business Administration, cited in Founder institute, 2019)

As highlighted by our results, an important implication for the policymakers is that the business angels seem to fulfil the funding needs unmet by the venture capitalist in the later stage of the firms. Though the chi-square test statistic is significant in the case of venture capital injections in the later stage of the startups, only six per cent of our sample firms could gain access to venture capital. With this much lower usage, in addition to the point that India is the world's third-biggest startup ecosystem, there might be supply-side issues that require attention from the concerned agencies to initiate policy decisions so that the more later-stage startups may receive the venture capital. One issue may be that the venture capitalists, while investing in startups, look for highly developed financial markets to exit via initial public offerings (Hall and Lerner, 2009). However, more than the supply-side issues (since the Indian angel and venture capital markets are growing), we expect there might be some demand-side factors such as quality of entrepreneurial team, level of innovation in the products/services offered by the startups, market attractiveness and competition level presented in the industry which reduce the likelihood of receiving risk capital like angel funds and venture capital for the Indian startups. We also warrant further studies in this area to assess the opinions held by venture capital investors about the quality aspects of the Indian startup firms and the exit opportunities available for them. Further studies may also be conducted to find out the interconnectedness among or between various funding sources, such as bank loan and NBFC loans and trade credit or angel finance and venture capital. These studies may reveal whether particular sources are substitutes or complements.

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Appendix

Table A
Variable Description

The table presents the coding description of the variables employed in the study.

Variable	Coding Description
Own funds	Takes 1 if the startup firm is using entrepreneur's personal funds; otherwise, 0
Friends and family funds	Takes 1 if the startup firm is using funds from entrepreneur's friends and family members; otherwise, 0
Angel finance	Takes 1 if the startup firm is using funds from angel or private investors; otherwise, 0
Trade credit	Takes 1 if the startup firm is using trade credit extended by the supplier; otherwise, 0
Venture capital	Takes 1 if the startup firm is using venture capital; otherwise, 0
Business loan from banks	Takes 1 if the startup firm is using business loan from banks; otherwise, 0
Business loan from NBFCs	Takes 1 if the startup firm is using business loan from NBFC; otherwise, 0
Owner/s' funding level	Percentage of owner/s' funds to the total funding
Financial diversity	Number of financing sources used by the startup out of own funds, funds from friends & family, angel funds, trade credit, venture capital, bank loan, and NBFC loan

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