

The Applicability of Pecking Order Theory in Kenyan Listed Firms

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Abstract

The focus of this study was to test the applicability of pecking order theory in capital structure formation of Kenyan firms listed on Nairobi Securities Exchange over the period 2002-2009. The study begins by addressing the factors affecting the formation of capital structure to Kenyan firms. The determinants of capital structure are relevant in testing the applicability of pecking order theory. The pecking order theory is based on the idea of asymmetric information between managers and investors. Managers know more about the true value of the firm and the firm's riskiness than less informed outside investors. Existing studies have produced conflicting evidence on applicability of the theories hence increasing the need to test the pecking order theory by using data from the emerging markets like Kenya. Significant gaps exist in finance literature as to whether the theory has any application on emerging markets like Kenya. Hence the objective of the study was to test the applicability of pecking order theory. The dependent variable for this study was gearing ratio while the independent variables were internal fund deficit and firm-specific factors like profitability, size, asset tangibility, non-tax shield and growth opportunities. Panel Data were obtained from financial tables of 30 firms processed in NSE and Multivariate Regression was used to analyze the data and test the hypotheses. The study established that size, non-tax shield, profitability, growth and tangibility are determinants of capital structure as predicted by pecking order theory. The study however found evidence supporting applicability of weak form of pecking order theory on listed Kenyan firms. The results are consistent to previous studies in developed countries. The study recommends for improvement of the bond market in Kenya to increase the availability of long-term external source of funds and provide Kenyan firms with more alternative sources of finance.

Keywords: Pecking Order Theory, Gearing, Fund Deficit, Surplus, Capital Structure

1.0 Background to the Study

In literature, both Modigliani-Miller (MM) and other diversified capital structure theories try to explain how firms supply their fund demands, how they should finance them, why some firms get into more debt or prefer different financing methods. These and changing expectations of firm managers and shareholders have paved the way for the emergence of new theories. The explanations related to the formation of capital structure in firms and actions directed to determining the factors affecting the formation of capital structure are attempts to clarify capital structure which exhibits a dynamic characteristic out of a static condition (gearing level at the end of a specific period). Thus it is possible to come up with more than one explanation for any variable that is believed to affect capital structure. However, it is possible to categorize under three groups the explanations concerning the formation of capital structure: Trade-off Theory, Agency Theory and Pecking Order Theory.

The pecking order theory (Myers, 1984; Myers & Majluf, 1984) and its extensions (Lucas & McDonald, 1990) are based on the idea of asymmetric information between managers and investors. Managers know more about the true value of the firm and the firm's riskiness than less informed outside investors. To avoid the underinvestment problem, managers will seek to finance the new project using a security that is not undervalued by the market, such as internal funds or riskless debt. Therefore, this affects the choice between internal and external financing. This sequence reflects the motivations of the financial manager to retain control of the firm, reduce the agency costs of equity, and avoid the seemingly inevitable negative market reaction to an announcement of a new equity issuance.

The capital structure of a company, its determination and time variation continues to be a major object of interest for finance researchers. In recent years, a series of recognized papers have fundamentally challenged well established empirical findings on how firms choose their debt levels by pointing to major weaknesses in the design of traditional tests. Hence a large body of recent empirical research on capital structure focuses on testing the validity of the trade-off and pecking order theories. Shyam-Sunder & Myers, (1999) develop a simple empirical model that nests both theories and find strong support for pecking order theory. However, Frank & Goyal, (2003) examining a larger sample of U.S firms document weak evidence for the pecking order theory

1.1 Statement of the Problem

Recently, Kenya has implemented comprehensive economic reform programme to move towards the free market economy which influences her companies' choice of capital structure. Consequently this increases the need to address the issue of capital structure choice in these countries. While the existing studies have provided interesting and important insights into many factors determining the financing decisions of listed firms, they do not test

directly whether the incremental capital structure choice is affected by pecking order considerations. This study was designed to fill this gap by addressing the aforementioned issue.

Secondly, although the theoretical framework of pecking order suggests that financial deficit and surplus affect gearing differently, little attempt has been made to empirically investigate this difference. Addedeji, (2002) argues that it is the positive values of funds deficit not the negative values that matter. Therefore, he asserts that including these values could have reduced the effect of deficit values on the change in total debt. In the context of the pecking order theory, it is only the internal funds deficit not the surplus that forces firms to raise funds externally.

Moreover, firms may be more (less) sensitive to financial deficit than financial surplus, making the impetus of expanding debt for financing higher (lower) than that of retiring debt for soaking up financial surplus (free cash flow). Hence, to best of the researcher's knowledge, scanty, if any information is available in literature about what actually happens when the firms follow the pecking order theory while having surplus rather than deficit. The study fills this gap by investigating whether the firms respond differently or similarly to deficit and surplus and whether they are more or less sensitive in expanding debt for financing than in reducing (retiring) debt for absorbing surplus

1.2 General Objective

The focus of this study is to test the applicability of pecking order theory in capital structure formation of Kenyan firms listed on Nairobi Stock Exchange over the period 2002-2009.

1.2.1 Specific Objectives of the Study

- i) To investigate the prediction of pecking order theories for the relationship between gearing and profitability, tangibility, size, non debt tax shields, and growth opportunities as predicted by trade off and pecking order theory.
- ii) To taste the applicability of pecking order theory in Kenyan listed firms.

1.2.2 Hypotheses of the Study

H_{1a}: There is negative relationship between level of gearing and profitability as predicted by pecking order theory

H_{1b}: There is positive relationship between level of gearing and tangibility as predicted by pecking order theory

H_{1c}: There is negative relationship between level of gearing and, size as predicted by pecking order theory

H_{1d}: There is negative relationship between level of gearing and non debt tax shields, as predicted by pecking order theory

H_{1e}: There is negative relationship between level of gearing and and growth opportunities as predicted by pecking order theory

H₂: Firms do not follow pecking order theory in choosing capital structure even when they have surplus.

1.3 Significance of the Study

First, the attainment of the proposed study's objectives outlined here will make significant contributions to the school of thought of capital structure formation by highlighting the theoretical drivers behind financing decisions. Secondly, this study contributions to the school of thought of capital structure formation by highlighting the theoretical drivers behind financing decisions. The research setting allows for a clean test of predictions of the theories to provide strong results on their predictions. The study further contributes in terms of comprehensive methodology used to investigate the response of firms to financial surplus and deficit.

1.4 Literature Review

1.4.1 Pecking Order Theory

Pecking order theory (or pecking order model) postulates that the cost of financing increases with asymmetric information. Financing comes from three sources, internal funds, debt and new equity. Companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a "last resort". Hence: internal financing is used first; when that is depleted, then debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required (equity would mean issuing shares which meant 'bringing external ownership' into the company). In its strong form, the Pecking Order Theory sustains that equity issues would never occur, whereas in its weak form, limited amounts of issues are acceptable.

The pecking order theory (Myers & Majluf; 1984 (Myers, 1984)) is based on the idea of asymmetric information between managers and investors. Managers know more about the firm's riskiness and the true value than less informed outside investors. In order to avoid the underinvestment problem, managers will always seek to finance the new project using a security that is not undervalued by the market, such as retained earnings or riskless debt.

Myers (1984) argued that equity is a less preferred means of raising capital because when managers issue

new equity, it creates a signaling phenomenon. If firm management issues equity, investors believe that firm managers consider the current stock as overvalued and that managers are taking advantage of the overvalued equities. As a result, investors place a lower value on the new equity issuance. Conversely, optimistic managers will see their companies' shares as underpriced and decide not to issue. Therefore, this influences the choice between internal and external financing. Thus, according to pecking order theory a firm's gearing is not driven by the trade-off theory, but it is simply the cumulative results of the firm's attempts to mitigate information asymmetry.

In addition to asymmetric information problem there are other reasons why they consider use of debt as a better way compared to share issuing. The position of organizational sales is a good example since firms with a stable sales line give the priority to financing through debt for their finance needs by benefiting from market trust towards them. On the other hand the desire to avoid transaction costs associated with stock issuing may be viewed as another reason that makes financing via debt more preferable (Fama and French, 2004). A new shareholder brings in dilution of control while in debt there is no such risk of control loss. Beside information costs (as discussed above), transaction costs and agency costs provide an explanation as to why firms prefer internal funds as the cheapest source of financing over the external ones.

1.4.2 Trade-off Theory

Trade-off theory states that firms maintain an optimum capital structure where the marginal benefits of debt equals the marginal cost. This implies that firms have a target gearing and they adjust their gearing towards the target over time when it deviates. Business organizations define optimum borrowing rate considering benefits and costs of borrowing. If the bankruptcy costs overcome the tax advantage from borrowing it can make the value of this tax advantage a matter of discussion (Myers, 1984; 577). The balance between tax advantages of borrowing and financial distress costs is to be achieved in order to maximize the firms' value.

In summary the prediction of pecking order theory for the relationship between gearing (financing) and the variables which are suggested as determinants of optimal gearing is as follows.

Table 1 The Theoretical Signs of the Proxy Variables.

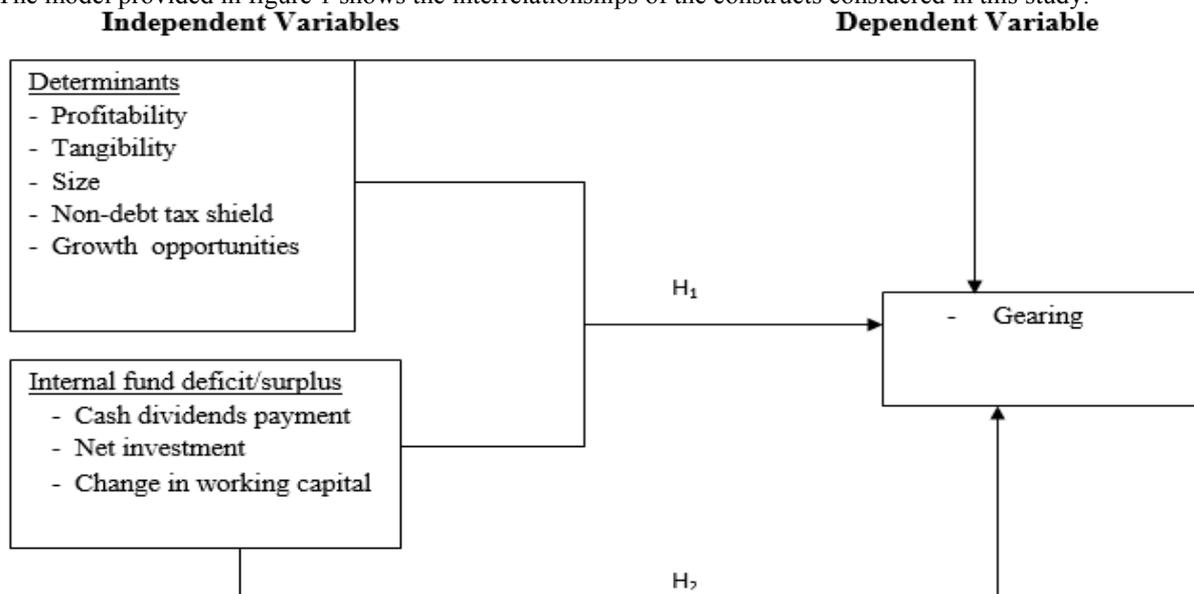
Variable	Pecking order theory	Trade off theory
Profitability	Negative	positive
Tangibility	Positive	negative
Size	Negative	positive
Non-debt tax shields	Negative	Negative
Growth opportunity	Positive	negative

Source: Author (2017)

As can be seen, pecking order theory and trade off theory have no common prediction for most of the proxy variables hence the need to test their applicability in Kenyan markets. If a firm follows pecking order theory, the sign on their coefficients will be as suggested above.

1.5 Conceptual Framework

The model provided in figure 1 shows the interrelationships of the constructs considered in this study.



Source: Author (2017)

The schematic diagram presented in Figure 1 shows the relationship between three variables under study, pecking order theory factors, determinants of capital structure and Gearing ratio. From the relationships hypothesized in the conceptual framework presented above, objective one, which is to investigate the prediction of pecking order for relationship between gearing and variables suggested as determinants of capital structure corresponds with H₁. The second objective, which is to test the applicability of pecking order theory in Kenyan listed firms corresponds with H₂.

1.6 Research Methodology

The chosen research design for this study was panel data based survey. This is due to the relatively small number of companies listed on the NSE (54) and hence all companies were considered for inclusion in the study.

The target population of this study comprised both domestic and multinational firms operating in Kenya which were publicly quoted in the NSE in the period between 2002- 2009. The reason for the study period selection is to minimize the missing observations for the companies. These organizations represent key sectors of the Kenyan economy which include the agricultural, commercial and services, finance and investment, and industrial and allied sectors.

Data for pooled and panel data econometrics techniques were extracted from the firm's annual reports, NSE records (i.e. annual fact book), NSE Company filing and NSE handbook. This was only for firms continuously listed in NSE during the period of study and whose financial table were are available

1.6.1 Operationalization of Research Variables

The dependent variables for this study consisted of gearing ratio while the independent variable for this study consisted of firm-specific factors like profitability, size, growth opportunities, non tax shield and tangibility. Others include Cash dividend, Net investment and change in working capital which are represented by internal fund deficit. Table 2 and table 3 lists dependent and independent variables respectively and shows both how they are operationalized in the study and authority from previous empirical studies.

Table 2: Dependent Variable

Variable	Operational Definition	Measurement
Gearing/Gearing ratio	Total debts including short and Long-term over total assets of the firm	Direct total debts/Total assets (Syham sunder & Myers ,1999)

Table 3: Independent Variables

Variable	Operational Definition	Measurement
Profitability	Earnings before interest and taxes	EBIT/Total assets (Murray et.al 2003)
Assets tangibility	Collateral value of assets on the firms gearing level	Total non-current assets /Total assets .(Murray et.al, 2003)
Size	Total assets of the firm	Natural logarithm of total assets (Murray et.al, 2003)
Non debt tax shield	The ratio of annual depreciation to total assets	Total depreciation/ total assets.(Syham sunder & Myers 1999)
Growth opportunities	Growth of firms intangible assets that is created by managerial skills and competence	Ratio of market to book values. (Murray et.al,2003)
Cash dividend	The amount of dividend paid in a particular year	Total dividend in a year (Flannery & Rangan, 2006)
Net investment	Capital expenditure in a year	Total change in non current assets in a year. (Flannery & Rangan, 2006).
Working capital	The difference between current assets and current liability in a year	Total change in working capital in a year. (Flannery &Rangan, 2006)
Cashflow	Operating cash flow after interest and taxes for the firms in a year	The net profit after interest and taxes for a year. (Flannery & Rangan ,2006)
Internal fund deficit	Total debt issued and /or equity issue in a year	Dividend + investment + change in working capital -net profit after tax. (Flannery & Raugan ,2006)

1.7 Data Analysis

Pooled and fixed/random effect regression model were used to test the pattern of relationships between the research variables as stated in the hypotheses. Since panel data contained observations on the same cross-sectional units over several time periods, there might be cross-sectional effects on each firm or on a set of group of firms. Several techniques are available to deal with such type of problem but two panel econometric techniques, the fixed and

the random effects models are very important. The fixed effects model takes into account the individuality of each firm or cross-sectional unit included in the sample by letting the intercept vary for each firm but still assumes that the slope coefficients are constant across firms. The random effects model estimates the coefficients under the assumption that the individual or group effects are uncorrelated with other explanatory variables and can be formulated (Gujarati, 2003). This study also employed the Hausman specification test to determine which estimation model, either fixed or random effects, best explain our estimation.

1.8 Results and Discussion

1.8.1 Testing the Prediction of Pecking Order Theory

The first test was to investigate the prediction of pecking order theory for the relationship between gearing and determinants of capital structure. The results of the fixed effect model used to investigate the relationship between gearing and explanatory variables are presented below. It is expected that if pecking order theory is pertinent in Nairobi Securities Exchange, the following relationships shown in Table below, column two are expected between gearing and the determinants. The results of the study are shown in the third column.

Table 4

Determinants	Expected sign for pecking order	This Study
Profitability	Negative	Negative
Tangibility	Positive	Negative
Size	Negative	Positive
Growth	Positive	Positive
Non-tax shield	Negative	Negative

Source: Author (2017)

Consistent with what has been found in literature (Myers & Majluf 1984; Jensen 1986), profitability was found to be negatively related to gearing and statistically significant at 0.05 level. Fama & French (2002) noted that the negative relationship between profits and gearing is consistent with the pecking order theory.

The tangibility of assets or asset structure was found to be negatively related to gearing but statistically insignificant at 0.05 level. The results are inconsistent with the predictions of pecking order theories which predict positive relationship. However, it may support the view of Kunt & Maksimovic (1994) and Booth et al. (2001) that markets for long term debt are not effectively functioning in developing countries.

Firm size is found to be positively related to gearing ratio. This is inconsistent to pecking order theory which predicts negative association but consistent to trade off theory. This implies that larger firms might be less susceptible to financial distress and therefore more able to generate debt at more attractive interest rates. In addition, large firms are well diversified and therefore perceived to be low risk. This is consistent with the findings of Rajan and Zingales (1995) and Bevan and Danbolt (2002) among others. This finding suggests that borrowing capacity for Kenyan firms is significantly limited by their bankruptcy or financial distress risks.

The positive association between the growth opportunities and gearing is consistent to pecking order theory and to studies which used this proxy for growth like Titman & Wessels (1988); Rajan & Zingales (1995) and Chen (2004). Growth opportunities represent the expected growth of firm's intangible assets that is created by managerial skills, goodwill and competence. The pecking order theory of Myers & Majluf (1984) and Myers (1984) predicts that gearing and growth are positively related because for growing firms, internal funds may be insufficient to finance their positive investment opportunities and, hence, they are likely to be in need of external funds. The Kenyan listed firms are able to raise the additional funds through debt from financial institutions.

The non-debt tax shield was found to be negatively related to gearing. Similar evidence was reported by Ozkan (2001); Banerjee, et al. (2000) and Flannery & Rangan (2006). The results are consistent to Wald (1999) and Deesomsak et al. (2004) who reported a significant negative relationship between gearing and non-debt tax shields. The negative relationship supports the view that the existence of non-debt tax shields, such as depreciation, reduces the importance of the fiscal advantage of debt and consequently, reducing the need to raise debt for tax consideration. This implies that Kenyan listed firms enjoy other deduction from their income which reduces the impetus to use the risk debt.

1.8.2 The First Test on Pecking Order Theory

In this test the deficit variable is added as an additional explanatory variable in the model used to investigate the determinants of capital structure in Kenyan listed firms on the NSE. The main objective of developing the model was to test for the prediction of pecking order theory that firms tend to raise debt only under pressure of an internal funds deficit. Therefore the deficit variable should wipe out the effects of the other explanatory variables in the first model on capital structure. This means all coefficients must be equal to zero except for the fund deficit coefficient. The following relationship was used for the test.

$$ge = \beta_0 + \beta_1 ge + \beta_2 Pr\ of + \beta_3 Tan + \beta_4 Size + \beta_5 NT + \beta_6 G + \beta_7 LG + \beta_8 fd$$

Where

ge= gearing
 Lge = Lagged gearing
 Prof = profitability
 Tan= tangibility
 Size= size
 NT= Non tax shield
 G= growth
 LG= Lagged growth
 fd= fund deficit

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ and β_8 are parameters

According to Hausman test, the fixed effect model was found to be more suitable for the dataset. The results of the fixed effect estimate are presented below in Table 5

Table 5: Result of Second Test

Variable	coefficient	Std.err.	t	p>t
Lagged gearing	0.4390	0.0603	7.28	0.000
Profitability	-0.2537	0.1170	-2.17	0.039
Tangibility	-0.0892	0.0540	-1.65	0.109
Size	0.02104	0.00818	2.57	0.115
Lagged growth	0.0115	0.00377	3.07	0.005
Non tax shield	-0.1527	0.4724	-0.32	0.749
Fund deficit(fd)	0.0218	0.02483	0.88	0.387
Constant	0.0067	0.1192	0.06	0.955
R-sq=0.65 N=209 F(7,29)= 11.67. prob>F= 0.000				

Source: Author (2017)

The results confirm that the variables which were found to be statistically significant in the first model are still significant in the second model and with no change in the signs. Furthermore, the results show that the deficit variable is positively related to gearing but statistically insignificant at the 0.05 level. Consequently, adding the deficit variable to the model does not overwhelm the effect of other explanatory variables on gearing as was expected. If the pecking order factors were the key drivers, it should have wiped out the effects of the conventional variables. This did not happen and even the deficit variable was statistically insignificant implying that debt and equity are used together to meet fund demand. The variable financial deficit/surplus has a limited explanatory power for the incremental capital structure choice.

The results are in agreement with Frank & Goyal (2003) for the USA, and Adedeji (2002) for the UK that a funds deficit is just one factor among many that firms trade off when funding their projects. However, the financing deficit is empirically relevant in Kenyan situation given that listed firms may prefer to issue equity to debt financing when they obtain external finance to fund new investments due to lack of space to accommodate more debt. Hence the weak pecking order hypothesis would accommodate some equity issue. The results concurs with Lemmon & Zender (2010) that financially unconstrained firms tend to follow pecking order while constrained firms are less likely to because of limited debt capacity and will use equity and debt together.

1.8.3 The Third Test on Pecking Order Theory.

This involves testing of symmetric as well as asymmetric effects of financial deficit and financial surplus on the change in total debt. The financial deficit variable was divided into two variables, the positive and the negative deficit variable to allow for testing the asymmetric effect of financial deficit

$$Cd = \beta_0 + \beta_1 def + \beta_2 sup + \varepsilon$$

Where, Cd= change in total debt of a firm
 def = Financial deficit ie def>0
 Sup=Financial surplus ie def<0
 ε = errors term

The above model allowed for testing of pecking order theory for symmetric and asymmetric effect of financial deficit and surplus, whether they vary with change in debt or not. This specification allowed the pecking order theory to vary depending on whether the firm has financial deficit or surplus. The individual hypothesis tested was $\beta_2 = 1$ and joint test $\beta_1 = \beta_2$ that is $\beta_1 = 1, \beta_2 > 0$ is required for the pecking order to hold, while $\beta_2 < 0$ implies that firms respond to their financial surplus by expanding debt, not by retiring debt as the pecking order theory suggests,

Table 6: Result of Third Test

Variable	Coefficient	Std. error	t	p>t
Surplus(sup)	.1594	0.1101	1.45	0.149
Deficit (def)	.4138	.1857	2.23	0.027
Constant	.0106	0.2885	0.37	0.713

The fixed effect model was found to be more suitable for the test. As per the results presented Table 6, it is evident that financial deficit and surplus affect change in debt differently. The estimated coefficients are all positive. Moreover, the Wald test rejects the null hypothesis that the coefficients of the deficit and surplus are not different, since it is found to be statistically significant at the 1% level. The financial deficit variable was found to be significant at 5% level and its slope coefficient was highest at 0.414 compared to surplus coefficient 0.159 and insignificant.

1.9 Conclusion

The overall results on expected signs indicate that Profitability, growth and non debt tax shield support the prediction of pecking order theory while size and tangibility do not support as per signs on the model. Of the three, only profitability is significant at 0.05 level hence there is weak evidence on applicability of pecking order theory. On adding the deficit variable on the previous model on determinants of capital structure to test for the prediction of pecking order theory, the results showed no change on the sign and significance of the estimated coefficients. Hence, the deficit variable did not wipe out the effects of the other explanatory variables in the conventional gearing regressions as expected for pecking theory to apply. However, the results indicate that the deficit variable is one among other factors affecting firm financing behaviour.

Secondly and importantly, the estimated models support the prediction of pecking order theory that financial deficit and surplus affect the change in total debt differently. However, Kenyan firms are more sensitive in retiring debt to save their debt capacity than in expanding debt to finance deficit. This finding implies that there would appear to be significant constraints on the supply of loans to Kenyan firms such as the bankruptcy and agency costs of debt.

Finally, Kenyan firms were found to be highly geared with little retained earnings implying that they are financially constrained. Financially constrained firms indeed heavily rely on equity for extra external finance. This explains why there is little evidence supporting strong pecking order theory. However there is strong evidence supporting applicability of weak pecking order theory by listed Kenyan firms. The theory alone may not explain the whole issue of capital structure in Kenya hence it complements and competes with other mainstream empirical models of corporate gearing.

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