

# EFFICIENCY AND INTERNAL, EXTERNAL GOVERNANCE AND CONTROL MECHANISMS OF TUNISIAN BANKS

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## Abstract

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This paper aims at determining the role of banking governance mechanisms in banking operational efficiency. To this end, we reviewed agency theory literature and its effects on banking efficiency in view of determining conflicts of interests between shareholders and managers. In particular, we aim at determining the role of majority shareholders and that of the Board of Directors. These actors govern under a context of financial liberalization known by increased competition. Accordingly, two main theories are distinguished. While the "Quiet Life" theory stipulates that competition leads to banking efficiency, the "Information-Generation" theory, on the contrary, asserts the opposite trend and argues for an imperfect competition in the market.

Our empirical study focused on a sample of 10 Tunisian banks observed during the 1999 to 2016 period. This paper is the first in the Tunisian banking market, which aims to study the particularities of internal and external governance mechanisms of Tunisian banks and more particularly the mechanisms that act on the banking efficiency by introducing the index of IHH and the bank concentration ratio.

The results show that Tunisian banks operate under a rather perfect competition reflected in ownership dilution, product homogeneity, capital fluidity and information transparency. This market has reinforced the beneficial role of competition in banking efficiency. As for the role of the internal and external governance mechanisms, all Tunisian banks allocate their resources in the same way, and their capitalization and institutional dimensions support more banking efficiency in terms of their productivity.

**Keywords:** Efficiency, Banking Governance, Control Mechanisms, Productiveness

## 1. INTRODUCTION

As financial crises have intensified during the last decade, and the banking sector has witnessed major blows in performance and efficiency. Banking fragility and risks intensified too. Accordingly, concern with banking risk is introduced in the Basel Committee I and highlighted in Basel III.

Efficiency is generally measured in terms of efficiency curves or scores. Then, a distinction is made between efficiency and performance. Indeed, banking efficiency was examined by several studies that operationalized the issue as the control of costs

against incomes for a particular objective pursuing an appropriate strategy. As for performance, it distinguishes itself from efficiency. It measures returns to shareholders and the different stakeholders based on stock market performance.

Banking governance is a wide concept. It represents all the mechanisms that organize the operations of the bank. It aims at directly controlling the bank with a view of protecting shareholders from managers' abuse of power. These mechanisms include legal and regulation mechanisms (capital regulation, prudential norms), internal mechanisms (board of directors, managers' capital share, remuneration contracts, financial structure and

debt, bank size), external mechanisms (ownership structure, shareholder type, public or private) and control mechanisms (competition, concentration...).

In this paper, we will answer the following question: Which governance mechanisms act more on banking efficiency?

Most governance studies have ignored governance issues at the bank level, mainly in emerging countries (Caprio et al., 2004). This theme is important because banks play a leading role in the economies of the countries. The changing international context and globalization are affecting the functioning of banks. In Tunisia, despite the structural changes in the financial system that have strengthened the role of the financial market since the 1990s, banking intermediation remains the main mode of financing the economy. The group of Tunisian banks is the most important pole of the Tunisian financial system. Considering all these considerations, it is interesting to conduct an elaborate study in the Tunisian banking sector.

Initially, we will review the relevant literature that examined the causal relationship between banking efficiency and the internal and external governance mechanisms and control mechanisms like banking competition and concentration.

We then move to examine the effect of governance mechanisms on banking efficiency in a sample of Tunisian banks, trying to enrich this relationship by including macroeconomic control variables like inflation and economic growth.

This paper is organized as follows: Section 2 presents literature review, Section 3 describes the sample and the model specification, Section 4 provides the results of our regression and its analysis. Finally, Section 5 concludes the paper.

## 2. LITERATURE REVIEW

Broadly, efficiency amounts to informational efficiency of capital markets. This perspective reports to Agency theory. According to Jensen and Meckling (1976), a market is said to be efficient if its agents are well-informed and there is no information asymmetry. In more a strict sense, efficiency is measured by costs and profits, but its determiners always remain limited when examined from an informational sphere and under the paradigm of Agency theory and conflicts. Then, is the relationship between the bank and efficiency a direct relationship? According to agency theory, the relationship between shareholders and managers is always conflict-based as managers always think of entrenching themselves by adopting specific opportunistic investment decisions without thinking of their long-term effects. On the other hand, shareholders always think of profitability and efficiency. As a result, efficiency in terms of costs and profits is reduced and can be resolved by solving this type of conflicts of interests.

Several approaches were conceived to measure efficiency. Usually, efficiency is measured by productivity ratios. A productivity ratio is an output quantity resulting from a given input quantity or means of production. There are two productivity measures: total productivity which measures all the output and input quantities of the bank and partial productivity which measures only a sample of these two quantities (Fried, Lovell, Schmidt, 1993).

Efficiency knew much progress in a way it includes now productivity, cost and profit efficiency. Chaffai and Dietsch (1998) applied the «Data Envelopment Analysis» method to study the efficiency of Tunisian banks. They found that the studied banks became more and more efficient from 1994 to 2000. In the next section, we will review the rest of the literature that focuses on the effect of governance mechanisms on banking efficiency.

The board of directors can be an internal control mechanism. External directors are more likely to control managers (Adam & Mehran, 2003) and they are generally institutional administrators with a capital share in the bank and who seek efficiency and banking performance (Alexander & Paquerot, 2000).

Directors are different in profiles. They can be public, institutional, private and foreign. Flax and Chen (2004) showed that the presence of the State in the board of banks in Taiwan causes inefficiency and financial distress because of arbitrary financing plans. Foreign and institutional directors in the board can better exert control and maximize bank value thanks to their technological knowledge and their comparative informational advantages.

The duality of functions between the president of the board and the manager may undermine performance as the same person is likely to protect their interests at the expense of performance (Gary & Gleason, 1999). On the contrary, Fogelberg & Griffith did not find a significant relationship between performance and this duality.

Several studies focused on the causal relationship between bank size and efficiency. Size has been found to be a governance mechanism which generally increases efficiency. However, no consensus is established between bank size and its profitability. Indeed, Maudos & Guevara (2007) and Idries & Graraibeh (2009) found a positive and statistically significant relationship between bank size and its profitability. Similarly, Ben Naceur & Omran (2012) found no significant relationship between these two variables. However, studying a sample of Tunisian banks, Ben Naceur & Goaid (2010) and Ghazouani & Moussa (2013) noted a negative and a significant relationship between bank size and the profitability of the studied Tunisian banks.

Shepherd et al. (1993) maintained that big banks are more efficient than small banks and this thanks to economies of scale since big banks have a discriminating power on the market and can reach their objectives at a lesser cost by allocating the fixed costs.

Chichti & Karray (2006) showed that big banks are more efficient than small banks. This is because big banks allocate better their resources and pursue well economies of scale.

On the contrary, Ditetesh (1999), by establishing an efficiency border for costs and profits, found that size has no effect on the efficiency of French banks. This means that all French banks use in the same way the techniques at their disposal and optimize their means identically. Sufian (2008) measured bank size using total deposits and showed that small Malaysian banks are less efficient than big banks that are more attractive in the market.

Ben Naceur & Goaid (2001), Kosmidou et al. (2005) Ben Naceur (2003), Ben Naceur & Goaid (2008), Ghazouani & Moussa (2013) underlined a positive relationship between banking profitability and capital ratio. Their results confirm that the most profitable banks are those with a high level of equity capital compared to their credits.

Pasiouras et al. (2007) found that capitalization has a positive effect on the technical efficiency of Greek banks, yet the author found no effect either on resource allocation efficiency or cost efficiency.

The presence of public shareholders in the bank is likely to gear credits allocation policies to social development plans that can maximize social welfare, which in return will favor the economy and consequently long-term efficiency increases thanks to economy of scale objectives achieved at the macroeconomic level (Stiglitz and Weis 1981).

Dinç (2005), Uhde & Heimeshoff (2009) found the opposite trend. These authors noted that private banks outperform public banks thanks to their competitive advantages in terms of cost reduction, which necessarily supports more efficiency.

Demsetz (1983) showed that ownership concentration boosts banking performance thanks to the control exerted by majority shareholders over managers. This finding is consistent with those of Dietsch & Vivas (2000).

Two theoretical yet contradictory approaches examined the relationship between banking efficiency and competition. The first one proves that competition improves banking efficiency, while the second highlights the negative effects of competition on efficiency.

The first assumption was introduced by Bath (1956), who showed the beneficial effects of competition on banking efficiency. Indeed, in case of a monopolistic market, banks are going to leverage high taxes on prices along with their competitors and as a result, they will record a loss of efficiency. From this assumption, it follows the "Quiet Life" theory, introduced by Hicks (1935). The author stipulates that in case of absence of competition, directors feel comfortable, with no control and as a result they will opt for specific investments which help to root their interests in the bank (construction of buildings, bonuses and excessive advantages).

The second theory, introduced by Demsetz (1973), argues for the negative effects of competition on banking efficiency. Empirically speaking, there is a negative relationship between competition and efficiency. Such an effect results from information asymmetry in a competition like moral risk and adverse selection.

Dell'aiccia (2000), Shaffer (1998), Hannan (1993), Goldberg & Spoke (1996), Vennet (2002) argued for the Efficient Structure theory. They showed a negative relationship between competition and efficiency.

In our paper, we are testing these two theories. Indeed, a perfectly competitive market generates the only efficiency. On the contrary, if the market is in imperfect competition, this generates banking inefficiency. Therefore, it is relevant to study the main differences between the different competition scenarios and determine the factors contributing to inefficiency.

Chen (2007) showed that liberalization and

deregulation of EU banks decreased interest margins and increased the competition index, improved credit quality and made banks more and more efficient. Paradoxically, Repullo (2004) found that competition and competitiveness offer arbitrary interest margins, which will be incompatible with the banking market and later decreases efficiency.

The second theory, which highlights the effect of the nature of the markets and their repercussion on banking efficiency, gives a determining role to the number of banks operating in the interbank market. Under this line of thinking, banks think of rooting themselves by offsetting important market segments and this would lead to banking concentration that can slow down perfect competition and as a result banking inefficiency (Demsetz, 1973; Peltzman, 1977).

Boyd & Nicolo (2005) showed that competition increases banking concentration and banks tend to merge more and more creating solid entities able to undermine efforts to lessen interest rates. This would raise interest rates leading to a lesser control of banking costs, as a rise in interest rates tends to attract bad customers and therefore a productive inefficiency cost.

Another theory, introduced by Chen (2007), combines liberalization of the interest rate with banking concentration. Chen (2007), theoretically modeling the passage from a monopolistic market to a liberalized competitive market, noted that if only one bank operates in the market, this increases interest rates, a scenario which negatively affects banking efficiency.

Presence of foreign banks tends to reduce interest rates as these banks will try to gain more market shares and specifically the customers of the domestic banks. Accordingly, inefficiency prevails in a monopolistic market, since banks do not invest too much in informational quality, and they limit themselves to raising the interest rate by keeping known borrowers and loyal customers. However, in a competitive market, inefficiency cost will prevail, pushing banks to lower the interest rate to accumulate more benefits.

Then, to solve for banking inefficiency, in the presence of foreign banks, the decrease in the interest rate should be substituted by a selective score that distinguishes between good and bad borrowers. Thanks to technology, such a move may generate a benefit in terms of information value allowing for detecting more relevant information on the market without additional agency costs resulting from monitoring borrowers. This marginal benefit in information allows domestic banks to be efficient when operating in a competitive market.

Hauswald & Marquez (2006) introduced the «Information Generation hypothesis". This hypothesis, articulated under the information asymmetry theory, distinguishes between adverse selection and moral risk. As for the first, it intervenes before the contract signature between the customer and the bank. The second appears after signing the contract. The bank must adopt three possible strategies: a mixing strategy, characterized by raising the interest rate, (Stiglitz & Wei, 1981), a selective strategy, offering different types of contracts according to collateral, the probability of rationing the interest rate (Bester, 1985); Lob and Statnik, 1998), and a gradual acquisition of

information strategy (based on the relationship with the borrower) (Petersan & Rajan, 1994).

Ben Said & De Palma (1995) showed that differentiating banking products (credits) for the same interest rate weakens pure and perfect competition.

Tangkou (2015) et al. showed that the involvement of the board of directors as head of the institution is positively correlated with the profitability of the assets and the profitability of banks' own funds on research conducted in Cameroon, which aims to study the bank profitability over a period extending from 2005 to 2012.

Belkebir et al. (2018) proposed a study on the empirical analysis of the effects of banking governance mechanisms (board structure and shareholding structure) on the efficiency and performance of the 8 Moroccan universal banks by Econometric modeling in panel data over a period of 10 years from 2007 to 2016. These authors have shown that the variables representing the duality, the capital held by foreign investors have a statistically significant and negative effect on the banking performance while the size advisory, institutional investor participation and state ownership have a significant positive impact on bank performance.

Pessarossi & Wei (2015) use a sample of 100 Chinese banks during the period from 2004 to 2008; they show that banks have made major changes in their capital ratios following new regulatory requirements. The results show that own funds negatively influence banks' inefficiency. In other words, more capitalized banks are more efficient banks. In addition, efficiency plays a positive role in financial stability. Several studies have chosen a Tobit model to examine the factors that influence the efficiency of banks. We quote for example Alrafadi, et al. (2014) for the Libyan commercial banks and Gunes and Yilmaz (2016) for the case of Turkish banks. This model is used according to these authors when the dependent variable is censored or limited.

### 3. METHODOLOGY

#### 3.1. The sample

We study the impact of competition on the efficiency of Tunisian banks. Our sample is made up of 10 Tunisian commercial banks listed on the Tunis Stock Exchange (BVMT) over the 1999 to 2016 period. The sample chosen is restricted because of the narrowness of the Tunisian banking sector. Financial and governance data are collected from the annual activity reports of the banks.

#### 3.1. Model specification

To measure banking efficiency, we opt for the bank productivity ratio as our dependent variable and measure its effect on the factors most determinants of efficiency. These are the governance mechanisms specified in terms of bank size, bank capitalization, ownership structure, the concentration index of Hirschman and Herfindahl and the concentration ratio as a measure of competition.

Those measures are associated with macro-

economic variables like inflation rate and growth rate.

Our model is inspired by the work of Bikker & Haaf (2002), Park & Weber (2006), Maudos & Guevara (2007), Uhde & Heimeshoff (2009), Ben Naceur & Omran (2011), Amidu & Wolfe (2013).

The model with a linear regression will be written as follows:

$$ITC_{i,t} = \alpha_0 + \alpha_1 IHH_{i,t} + \alpha_2 CR_3 + \alpha_3 PIB_{i,t} + \alpha_4 INF_{i,t} + \alpha_5 OWNER_{i,t} + \alpha_6 CAP_{i,t} + \alpha_7 TB_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable ITC is the "income to cost ratio". Expenditure is taken into account in the numerator of the ratio, because it includes depreciation costs, it includes rentals or acquisitions put into the records. Overhead" (OH) is the overall staff costs and other general operating expenses, including depreciation costs. In the denominator, net interest income (NI) and commissions (NC) from banking intermediation activities are taken into account as well as the "Other net revenues" (IO) not related to banking intermediation.

1. *The Herfindahl-Hirschman Index*: The Herfindahl-Hirschman Index (*IHH*) allows, also, for measuring the concentration level in a given market:  $HHI = \sum_{i=1}^N MSi^2$ , where *MSi* is the share of the *ITH* bank in the banking industry which will be calculated either in terms of total assets or total credits or total deposits, and *N* is the number of banks operating in the market:

$$MSi = \text{Total assets the bank } i / (\text{Total assets all banks kept in the model}) \quad (2)$$

2. *Banking Concentration Ratio*  $CR_3$ : The concentration ratio ( $CR_3$ ) is a widely-used indicator by several studies that aim at measuring the degree of concentration of an industry in a given economic context. This index is as follows:  $CR_3 = \sum_{i=1}^3 MSi$ , where *MSi* is the share of the *ITH* bank in the banking industry which will be calculated either in terms of total assets or total credits or total deposits.
3. *Bank Size (TB)*: According to the literature, bank size is measured by the natural logarithm of its total assets. This variable is generally used to capture savings or economies of scale in the banking sector.
4. *Banking capitalization (CAP)*: Capitalization can also have a negative effect on efficiency. Once banks are capitalized, they feel comfortable, they are more likely to invest; they work hard and therefore they reduce banking inefficiency (Van Roy 2005). On the other hand, the regulations of Basel III require a strong regulatory capital which reproduces the classic capital ratio, in order to cover risk (Godlowski, 2004).
5. *Bank Ownership (OWNER)*: It is a dummy variable that takes two values: 0 if the ownership of the Bank is private; 1 if the ownership of the bank is public.
6. *GDP Growth Rate*: GDP growth rate is a macroeconomic indicator, often used to measure the total economic activity of a given country, i.e., its economic growth. This variable has been widely used by researchers like Uhde & Heimeshoff (2009), Amidu & Wolfe (2013) as a

control variable in order to examine the link between competition and banking profitability. These authors, like most other researchers, agreed on a positive relationship between banking profitability and economic growth. In contrast, Demirgüç-Kunt et al. (2004) have underlined the significant and negative impact of banking profitability and GDP growth rate.

7. *Inflation (INF)*: This variable was introduced in several studies, as a control variable to explain the relationship between performance and banking competition. In their studies, Uhde & Heimeshoff (2009), Ben Naceur & Omran (2011) and Amidu & Wolfe (2013) noted that inflation affects negatively bank performance.

### 3. THE RESULTS

Before proceeding to estimating the model, it is necessary to conduct a few preliminary tests on our variables. The homogeneity test indicates the low variability of the different parameters of the model confirming thus the homogeneity of our sample. The correlation analysis points to a low correlation between the different independent variables, which indicates the absence of a multicollinearity problem. We can test all the variables in the same model.

As for the Hausman test, it shows a significant Chi-square around 0.0091 which is less than 5%. This result confirms the unpredictable effect of our model. The results are summarized in the following table:

**Table 1.** The multiple regression analysis

Variable	Coefficient	Std. Error	t-Statistic
C	8.152741	1.880893	4.334506
SIZE	-0.088205	0.058856	-1.498645
CAP	-3.112052	0.646225	-4.815738
OWNER	-0.176054	0.128507	-1.369996
IHH	-139.8376	38.91094	-3.593787
CR3	-23.11100	6.539155	-3.534249
PIB	-13.50697	3.388005	-3.986702
INFLATION	-0.707853	3.080014	-0.229821
R-squared	0.844523		
Adjusted R-squared	0.540035		
S.E. of regression	0.768311		
F-statistic	2.215102		
Prob(F-statistic)	0.016365		

On the whole, the model is significant since the Fisher test shows a lower significant statistics at the 5% level. The Durbin-Watson test statistics ranges between 2 and 4, indicating an absence of error autocorrelation. As for the determination of this model, we note that the variables explain up to 9.8% banking efficiency. Such a finding brings to the fore the question of the mechanisms omitted in our model. These are Board governance mechanisms, ownership concentration, and manager involvement.

As for bank size, we found no significant relationship. Then, whatever the sign positive or negative, this variable is of no interest to us. We conclude that all Tunisian banks allocate their resources in the same way whatever their resource allocation strategies. Tunisian banks do not take advantage of economies of scale. On the contrary, they accomplish a limited output. This result is consistent with that of Ditetesh (1999).

Capitalization shows a negative and a significant coefficient. It, therefore, plays an

important role in banking inefficiency. When they recapitalize, Tunisian banks fail in strategic decisions since their capital serves as a security mechanism against risks. This failure causes a decrease in productivity due to inefficiency. This result is consistent with that of Van Roy (2005).

Thus, internal governance mechanisms are not good enough to manage banking efficiency, because size is not significant and capitalization does not play its moderating role in managing efficiency.

Ownership type has a negative effect on banking efficiency. State ownership tends to relegate all strategies in favor of social objectives that are not necessarily profitable. Such a social orientation burdens Tunisian banks with production costs without maximizing revenues, causing inefficiency and unproductivity. This result is consistent with those of Dinç (2005); Berger et al. (2005); Uhde and Heimeshoff (2009); Porta et al. (2002); Uyod-Williams, et al. (1994); Uhde & Heimeshoff (2009).

As for *IHH* and *CR<sub>3</sub>*, their coefficients show a negative and a significant impact on efficiency. In other words, a decrease in the concentration index increases banking efficiency. This result supports the hypothesis which stipulates that a less concentrated market has a positive effect on banking efficiency. This can be explained by the fact that a high market concentration leads to a decrease in banking efficiency and creates conflicts. Indeed, newly entering banks tend to cast a new dynamic in the market, reducing banking concentration and encouraging better resource allocation mechanisms than decreasing the interest rate. In the face of competition, Tunisian banks will redouble their information-gathering efforts and will better attract their customers and not just focus on and adopt prudential strategies. This result is consistent with the "Quiet life hypothesis".

As for competition concentration for Tunisian banks, the *HH* Index is 0.11, which is very low, indicating that Tunisian banks operate under perfect competition and the market is not monopolistic.

Referring to the "Quit life hypothesis", the perfect Tunisian market is at least proved. It follows, then, that efficiency is checked because concentration is low and even diluted, information circulates well, and the market tends to be deregulated. This result is consistent with those of Bain (1956), Hicks (1935), Demsetz (1973) and Peltzman (1977), Chen (2007).

Economic growth rate shows a negative and a significant effect on banking efficiency. Tunisian banks, when expanding, tend to neglect their economies and poorly allocate their resources. Similarly, inflation has a negative effect on efficiency, in particular when there are inflationary shocks, costs increase and consequently, the banking market becomes inefficient. This result has been found by Uhde & Heimeshoff (2009), Ben Naceur & Omran (2011) and Amidu & Wolfe (2013).

The empirical analyzes of this study reveal important results. We noticed that the size variable does not admit any significant relation. The banking capitalization does not play the moderating role of control of efficiency because it admits a coefficient significantly. Negative, we also found, that the ownership structure during this study period has a negative effect on the banking efficiency that is due to the presence of the state in the capital. The high

concentration of the market leads to a decrease in banking efficiency because the concentration index has a negative and significant impact on efficiency.

#### 4. CONCLUSION

In this study, we examined the main theories that have been empirically validated, to determine the effect of internal and external governance and control mechanisms on banking efficiency in a sample of Tunisian banks.

Bank size has an important weight in determining banking efficiency. Three research currents are distinguished in the literature. The first shows that pursuing economies of scale, banks can do so by taking advantage of their size and attractiveness in the market. The second shows that large banks are inefficient in terms of cost control. The third current assumes that there is no relationship between bank size and banking efficiency. Tunisian banks report to the third research current, showing that they allocate their resources in the same way, and then they are likely to profit or lose.

Banking capitalization is also relevant to risk management. Efficiency-wise, capitalized banks will pursue economies through their financial independence at their own costs.

As for ownership structure, two approaches informed its study. An approach shows the beneficial role of the State owning large shares in the capital thanks to long-term strategies. The other approach shows the negative effect State ownership on efficiency because of its social welfare politics without regard the financial component. Our study has shown that a State owning a share in the banking capital only worsens efficiency, suggesting that the State's role is not a Moderator one. Such a finding encourages us to examine the beneficial role of institutional ownership and the entry of new banks as conditions to a pure and perfect

competition (Bath, 1956; Hicks, 1935; Demsetz, 1973; Peltzman, 1977; Chen, 2007).

The last enquiry in our study is to test the effect of banking supervision mechanisms as carried out by competition on banking efficiency. The competition presents a true dilemma in its measure, since reports to the concentration index. The higher this index, the more the market tends to be monopolistic. However, it is possible that concentration comes with competition, yet such a scenario gives way to monopolistic competition. Accordingly, competition is tested to determine competitiveness degree and its effect on efficiency.

The more the market tends will operate in perfect competition, the more we will have beneficial effects on banking efficiency. The key factors of competition are dilution of banking concentration, homogeneity of products, capital fluidity, and free capital movement and information transparency. The more these factors are respected, the more we will meet the "quiet life hypothesis", otherwise "Information generation hypothesis" is the alternative. The first theory proves that competition shows beneficial effects on efficiency and the second proves the opposite. The difference is that the banks that they are efficient should invest in informational quality, grant the same appropriations with the same quality, and substitute raising the interest rate with raising competition scores. This would attract more solvent customers and control better production costs by optimizing information-search costs.

In this regard, our study has shown competition's positive effects on efficiency, in a macro-economic level during recession periods and against inflationary shocks. This is consistent with the "Quiet Life Hypothesis", which assumes that a less concentrated banking market moves towards a perfect competition than towards a monopolistic competition.

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