

Bank Governance, Regulation and Risk Taking: Evidence from Tunisia

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Abstract

This paper investigates the hypothesis that governance and regulation have a role in reducing bank risk. Our evidences are partially consistent with standard agency theory. Using a sample of Tunisian listed banks between 2000 and 2014, we show that bank risk is, influenced positively by ownership structure and negatively by regulation, which confirm our hypotheses. However, board independence and board size seem to have the opposite expected effect, which is largely inconsistent with findings in the prior literature.

Keywords: Governance, Banking regulation, Banking risk, Ownership structure, Entrenchment

1. Introduction

Following the recent financial crisis, a large number of global initiatives have been developed to limit the likelihood of future banking collapses. The major effort has focused attention on the need for good governance and tighter regulation. In this context, increasing number of authorities have focused on the development of rules associated with stricter banking regulations and the establishment of a system of high-quality governance. For their part, the European Commission announced that it wished to long-term changes in the regulation and governance of the banking system. It is for this reason, that the International Monetary Fund and the World Bank have launched a broad list of best practices to be approved by each country to ensure the stability of their financial system. The regulatory capital is considered in this perspective as an important element of prudential regulations which refers to the Basel Committee as the general reference of banking supervision (Adams & Mehran, 2005; Capiro et al., 2007; Levine, 2004; Macey & O'Hara, 2003; Mülberr, 2009; Laeven & Levine, 2008, 2009). According to Sowerbutts & Zimmerman (2013) "Inadequate public disclosure by banks contributed to the financial crisis. This is because investors, unable to judge the risks that banks are bearing, withdraw lending in times of systemic stress". Following the global financial crisis (GFC), risk information in banks was, highlighted as an effective tool to avoid banking crises (Financial Stability Board, 2012).

The literature on financial crisis has shown that banks disclose more risk information to choose higher capital requirements and lower default risk (Boot & Schmeits, 2000; Cordella & Yeyati, 1998; Nier & Baumann, 2006). Existing research also announces the importance of looking at the same time the bank risk, the ownership structure, and bank regulation. Examining the non-financial companies, Agrawal & Mandelker (1987) found an inverse relationship between risk-taking and the degree of management control, while John et al. (2008) find that managers enjoying large private benefits select suboptimal investment strategies.

While the empirical evidence on bank risk is limited, much of the recent evidence appears to support the view that regulation can reduce bank risk. In this context, our empirical analysis is to examine the effect of regulation on bank risk when is used as a governance mechanism that can limit the private benefits of managers-owners. The study of the relationship between ownership structure, corporate governance, and risk-taking has occupied particular interest in banks (Sullivan & Spong, 2007). Alternatively, international studies offer much evidence, which explains how regulation can affect bank risk. In spite of the importance of this concept, there are remarkably few empirical tests, which estimate how regulation and ownership structure can explain the risk in Tunisian bank.

The objective of this study is to examine the relationship between ownership structure, regulation, and bank risk. The remainder of the paper is organized as follows: next section presents the literature review; the third section analyzes the data and methodology of our study. The empirical tests will be, presented and discussed in the fourth section. Section 5 provides some concluding remarks.

2. The Literature Review

Banks have a dominant position in financial systems; they are extremely important engines of economic growth. Indeed, when banks effectively mobilize and allocate funds, capital costs decline, the capital accumulation will be better and productivity will increase (Levine, 2004). In the banking sector, a main current communication is the risk reporting. The Basel Committee on Banking Supervision (BCBS) in Basel II (Pillar 3) emphasizes the importance of information on the bank risks to strengthen discipline Market (Basel Committee on Banking Supervision, 2006b). For example, the explanation the French bank's performance is related of the major part to the lower cost of risk (Lamarque, 2005). This confirms that risk management remains an important true competitive advantage. The Basel II identifies three types of major risks to which banks are required to set aside sufficient capital resources (i.e., the regulatory capital). These risks are the credit risk, market risk and operational risk (Basel Committee on Banking Supervision, 2006b). The Basel II defines operational risk as "the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events. This definition includes legal risk but excludes strategic and reputational risks "(Basel Committee on Banking Supervision, 2006b, p. 144). In addition, operational risk is itself a major source of risk and financial distress in banks.

Therefore, operational risk and communication management practices in financial institutions have recently attracted increased attention from academics, professionals and regulators (Basel Committee on Banking Supervision, 1998b, 2001; Ford et al., 2009; Helbok & Wagner, 2006). Banking theory indicates that banking regulations affect managers' risk-taking behavior in a different way than those of the shareholders. Corporate governance literature recommends that the ownership structure affects the ability of owners to influence the risk (Jensen & Meckling, 1976). As argued by Shleifer & Vishny (1986), Boyd & Hakenes (2008), shareholders with discrepancy between voting rights and cash flow (CF), have rights, great power, and incentives to influence firm risk.

The effect of the regulations on bank risk-taking can be positive or negative depending on the Bank's ownership structure (Laeven & Levine, 2009). The same regulation could have different effects on bank risk-taking by comparing the discrepancy between ownership and voting power of the bank blockholders. Changes in policies towards the bank property, such as allowing private equity groups to invest in banks or change limits on the concentration property could have very different effects on bank stability depending on the other side and effects of regulations. The separation of ownership from control is a source of conflict of interest between managers and shareholders (Berle & Means, 1932). Shareholders are interested in maximizing the value of the company as directors aim to defend their reputation and enhance their value in the labor market (Fama, 1980). Governance mechanisms have been, established to help align executive interests with those of shareholders.

Several studies (Laeven & Levine, 2009; La Porta et al., 2002) found that deposit insurance, activity restrictions, regulation and protection of the shareholders wealth affect the ability of owners of banks to take risks. For example, deposit insurance increases the ability and motivations of shareholders to intensify the risk (Keeley, 1990; Merton, 1977). Strong

investor protection is positively, related to risk taking (John et al., 2008; Paligorova, 2010). Finally, the incentives for risk-taking are also influenced by the banks' characteristics (Laeven & Levine, 2009; Paligorova, 2010) and economic conditions (La Porta et al., 1998; La Porta et al., 2002). De Walque et al. (2010) proposed on the default risk of payment in which a banking supervision chooses the minimum regulatory capital related to the heterogeneity of risk management. Brikovish et al. (2004) show that the use of interest rate derivatives increases with the proportion of outside directors on the board. Dionne & Triki (2004) show that such membership does not affect the company's risk management policy. In particular, the results of Marsden & Prevost (2005) indicate that the presence of outside directors has no effect on the decision of Hedging against Downside Risk.

Contrary to Booth et al. (2002), Adams & Mehran (2003, 2005) find that banks are characterized by large board size. Jensen (1993) proposed that small size increases the board's capacity to perform controlling function. Cornett & Tehranian (2002) argue that the independence of CEO and Chairman of the Board is important in the agency problem solving. The separation of these two functions allows a more objective assessment so that the cumulative function allows managers to run the company's wealth in a way that increases his interests at the expense of the owners.

Some other studies reported a stronger and positive association between ownership concentration and bank risk (Haw et al., 2010; Laeven & Levine, 2009). However, Shehzad, De Haan, & Scholtens (2010) found that credit risk tends to decrease with the higher level of controlling shareholders' participation. Iannotta, Nocera, & Sironi (2007) compare the performance and risk of a sample of 181 large banks from 15 European countries. They found that public banks have a lower credit quality and higher insolvency risk than private and cooperative banks. Bebchuk et al. (2010) also argue that the preferred level of risk taken by the shareholders of indebted banks exceeds the social optimum, and conclude that the salaries of bank CEOs should be regulated. Gordon & Muller (2011) suggest that shareholders in the financial sector internalize at least partially, the consequences of business failure (systemic risk) and are more reluctant to excessive risk-taking. Using data for 3000 banks from 86 countries, Demirgüç-Kunt & Detragiache (2011) do not find support for the hypothesis that better regulation and monitoring results in the strongest banks. Examining the problems related to the bank failures during the recent crisis, Aubuchon & Wheelock (2010), Ng & Roychowdhury (2011), Cole & White (2012), and DeYoung & Torna (2013) found that excessive investment banking activities, poor macroeconomic conditions, high concentrations have significantly increased banks' risk.

Studies on bank risk in the Tunisian banking sector are limited. In this context, Hamza (2009) studied the effects of ownership structure, as an internal control mechanism of corporate governance. He focused particularly on the impact of the size, number and type of blockholders on performance and risk taking of listed Tunisian firms during the period 2001 to 2004. The main outcome of this study indicates that the presence of controlling shareholders affects the performance and risk taking and plays an important role resolving agency problems.

3. Research Methodology

3.1 The Sample

This study aims to analyze the relationship between the ownership structure, regulation and bank risk. To achieve this goal, we considered 11 deposit banks that are publicly traded, and observed for the period from 2000 to 2014.

3.2 Choice of Variables and Hypotheses to be Tested

The Dependent variable: we use fourth measures of bank risk is our main test:

- The first measure is proposed according to Roy (1952), Hannan & Hanwick (1988), Boyd et al. (1993) and De Nicolo & Kwast (2001) who measure bank risk by using the Z-score of each bank and the volatility of stock returns. The Z -score is a proxy of bank stability and represents a measure of bank solvency. It represents a mix of accounting measures of profitability, leverage, and volatility. Specifically, the authors show that if the insolvency is defined as a state in which losses exceed equity ($E < \text{Losses}$) (where E: equity, NI net income, TA: total assets, $ROA = NI / TA$: return on assets and $K = E / TA$: funding ratio), the failure probability can be expressed as $\text{Prob}(ROA < K)$. Therefore, the Z-score is formulated as follows:

$$Z\text{-score} = (ROA + K) / SD (ROA) \quad (1)$$

Where SD is standard deviation, this ratio is an inverse measure of the probability of bankruptcy [Roy (1952) and Hannan Hanwick (1988), Boyd et al. (1993) and De Nicolo & Kwast (2001)]. Thus, the highest Z-score levels indicate that the bank is more stable.

- The second measure of bank risk is according to Saunders et al. (1990); Esty (1998) who used **volatility in equity returns (SD ROE)**. The return on equity is measured as net income / equity. Return volatility is the standard deviation of equity returns. Where NI is net income.

$$SDROE = SD (NI/E) \quad (2)$$

- The third measure of bank risk is **retained earnings volatility (SD INCOME)** which is equal to the standard deviation of the ratio of earnings before taxes and provision to total assets. Where EBTP is earnings before taxes and provision

$$SD INCOME = SD (EBTP/TA) \quad (3)$$

- The fourth measure of bank risk is the volatility of return on assets (SDROA) which is equal to the standard deviation of the return on assets. Return on assets is defined as the ratio of net profit / total assets.

$$SDROA = SD (NI/TA) \quad (4)$$

The Explanatory variables: We choose the explanatory variables of their importance in explaining the banks' risk underlying their financial intermediation functions:

The main explanatory variable: Bank governance is measured by fourth set of variables: ownership structure, The Board of Directors, The audit committee and Bank regulation.

(i) *The ownership structure*: this variable is measured by three variables: the management ownership (**MOW**), the participation of institutional investors (**INST**) and the concentration of capital (**MAJ**). We suppose that ownership structure (management ownership, institutional investors, concentration of capital) variables have positive effect on the bank risk.

(ii) *The Board of Directors*: The Board is represented by three variables: The board size (**BSIZE**), duality (**DUAL**) refers to the situation when CEO as also holds the position of the Chairman of the board. This variable is measured by a dummy variable (one if duality, zero if not). Independent board directors (**BIND**) (measured by the percentage of independent directors on the board). we suppose these variables have respectively positive, positive and negative effects on the Bank risk.

(iii) *The audit committee variables*: this variable is measured by the number of the meeting of the auditing committee (**Audit**). Thus, we suppose the number of meetings has a negative impact on Bank risk.

(iv) *Banking regulations*: The regulatory capital (**REG**) is presented in the form of international solvency ratios to be realized by credit institutions and financial companies operating a large international business. It is set by the Basel Committee and to strengthen the stability of the banking system and reduce bank risk. The solvency ratio is defined as the ratio of the bank's capital by the aggregate of its credit risks imposed on the bank in order to have a minimum amount of own merits proportional to its risk. This ratio must be greater than 8%. We suppose that regulation has a negative effect on bank risk.

Control variables: in order to explain bank risk with variables other than ownership structure, we choose five variables related to the bank characteristics: bank size (**SIZE**), the age of the bank (**AGE**), the quality of the asset (**LLOSS**), the Activity level (**LOANS**), the liquidity ratio (**LIQUID**).

- **BANK SIZE (SIZE)**: measured by the natural logarithm of the value of assets. This variable can have an effect on the risk of the bank through economies of scale. The large banks have easy access to capital markets and undertake a greater diversification of their portfolio. Therefore, we expected a positive and significant relationship between the size of the bank and bank risk.

- **THE AGE OF THE BANK (AGE)** is a factor that might influence the risk level of the bank's insolvency. The more the bank is old and has more experience in the field and the more accumulation of skills allows officers to better select investment projects. We use a dummy variable to measure bank age: 1 if the bank age is less than 20 years, 2 if the bank age is between 20 and 40 years, 3 when the age is between 40 and 60 years, and 4 for the bank with age more than 60 years. Then we expect a negative relationship between the age of the bank and bank risk taking.

- **The quality of the asset (LLOSS)** refers to the value of provisions for loss reported to the amount of total assets of the bank. Provisions for doubtful accounts measure the quality of the asset. We expect a positive relationship between this ratio and bank risk.

- The Activity level (LOANS) is the ratio of loans to total assets is a measure of the bank's activity. *A positive relationship between this ratio and the risk of insolvency is expected.*
- LIQUIDITY RATIO (LIQUID) is the ratio of realizable assets to current liabilities. According to regulations, this ratio must be greater than 100%. Banks with higher liquidity ratio face less risk.

3.3 Model to be Tested

$$Brisk_{it} = \alpha_0 + \alpha_1 Ownership_{it} + \alpha_2 Board_{it} + \alpha_3 Audit_{it} + \alpha_4 regulation_{it} + \alpha_5 CV_{it} + \varepsilon_{it} \quad (5)$$

Where all the variables of the model are described as follows:

- **Brisk** is bank risk as represented by (i) Z-score, (ii) equity return volatility SD ROE, volatility in net income SDINCOME, asset return volatility SD ROA.
- **Ownership** is measured by management ownership (MOW), the participation of institutional investors (INST) and the concentration of capital (MAJ).
- **Board** is described by the board size (BSize), duality (DUAL), and independent board of directors (BIND).
- **Audit** is measured by the number of meeting (Audit).
- **Regulation** is measured by the solvency ratio (REG).
- **CV** is control variables as defined by the size of the bank (SIZE), the age of the bank (AGE), the quality of the assets (LLOSS), Activity level (LOANS), liquidity ratio (LIQUID).

4. Results and Discussion

4.1 Descriptive Statistics

According to table 1, The Z-score is equal to an average of 21.4. The volatility of the return on equity equals 15.9%. The return on assets volatility is equal to 21.5% and for the profit is 16.9%. The average percentage of capital held by managers is 36.3% with a maximum value of 75%. Then we can conclude from this result that managers' stake in banks is a motif to keep them more concerned about maximizing their self-interests.

The participation of institutional investors is on average equal to 46.3% with a maximum of 81%. The concentration of capital is equal to 51.7% with a maximum value of 81.3% then we can deduce that most of the banks have an ownership much more concentrated in the hands of a few shareholders.

The Board size is between 7 and 17 with an average value equal to 11. The percentage of independent directors represents 35.8% of the total number of the board. The average number of the audit meetings is equal to 4. We note that bank regulation ratio is equal to an average of 12.3%, which is above the minimum required by the government (8%). Thus, we can conclude that banks considered in this study meet Basel Committee regulations.

Similarly, the liquidity ratio from an average value of 15.57, which is greater than 100% with a maximum value of 185.68 and a low of 0.66. In addition, the average age of the banks is considered between 20 and 60 years old, so the majority of Tunisian banks are old. Provisions and interest reserve on average equal 8.5% of total assets while loans represent on average 73.3% of total assets.

Table 1. Descriptive statistics

Variables	Observations	Mean	Max	Min	SD dev
Z-SCORE	165	21.443	62.767	-5.005	19.656
SD ROE	165	0.159	6.670	0.000	0.777
SD ROA	165	0.215	1.309	0.000	0.144
SD INCOME	165	0.169	13.202	0.001	1.341
MOW	165	0.363	0.75	0.074	0.164
INST	165	0.463	0.81	0.074	0.189
MAJ	165	0.517	0.813	0.190	0.516
BSize	165	11.270	17.000	7.000	1.566
BIND	165	0.358	0.640	0.090	0.135
Audit	165	4.048	12.000	4.000	0.623
REG	165	0.123	0.680	-0.062	0.084
Size	165	14.621	15.984	5.335	1.459
AGE	165	2.551	4.000	1.000	0.744
LIQUID	165	5.575	185.680	0.661	23.399
LLOSS	165	0.085	0.846	0.001	0.070
LOANS	165	0.733	0.915	0.435	0.085

4.2 Results of the Estimated Model

The results of the first regression (**dependent variable z -score**): we show (table 2, regression 1) that the model is globally significant with acceptable adjusted R² (28%). The variable measuring the management ownership is significantly and negatively, related with Z-Score, which is the inverse measure of the probability of bankruptcy. That is to say when CEO's participation increases the volatility of the return on assets. This result is consistent with the previous studies of Galai & Masulis, 1976; Demsetz Lehn, 1985; and Leaven & Levine, 2009, who have shown that entrenched manager tends to take more risky firms by choosing risky projects at the expense of creditors and minority shareholders. According to Amihud & Lev, 1981, managers may decrease their private portfolio risk through company diversification, reinforce their authority by rising company size beyond its optimal level by obtaining projects with negative net present value (Jensen, 1986), or expand firm activities in order to be more very important to their firms (Morck, Shleifer, & Vishny, 1990).

The board size is associated positively to Z-Score and negatively to bank risk, which means

that with a greater number of board members, optimal and efficient decisions are only taken if firm supports less risk. This result is consistent with the model of Blanchard & Dionne (2004), who suggest that the greater the number of directors increases, the use of sophisticated instruments to hedge against the risk. The regulation ratio is significant with a positive Z-Score and a negative effect on bank risk. This is consistent with Levine (2004)'s study who considers the strong presence of regulations adversely affect bank risk and helps governance system to monitor manager behavior. Kim & Santomero (1998) consider that one of the goal of regulation is to decrease the risk taking by influencing shareholders to place their personal wealth in risky assets.

Table 2. Estimated bank risk

$Brisk_{it} = \alpha_0 + \alpha_1 Ownership_{it} + \alpha_2 Board_{it} + \alpha_3 Audit_{it} + \alpha_4 regulation_{it} + \alpha_5 CV_{it} + \varepsilon_{it}$				
<i>Dependent Variable</i>				
	<i>Regression 1</i> <i>Z-Score</i>	<i>Regression 2</i> <i>SD.ROE</i>	<i>Regression 3</i> <i>SD.INCOME</i>	<i>Regression 4</i> <i>SD.ROA</i>
<i>Intercept</i>	57.79772 ^a	1.756698	11.87591 ^a	1.479388 ^a
<i>MOW</i>	-11.94217 ^a	0.8660963	2.295798 ^a	0.2924885 ^a
<i>INST</i>	0.6143488	-0.2987259	0.3699261 ^c	0.029531
<i>MAJ</i>	-2.762115	0.9895084 ^c	1.034262 ^a	0.1315658 ^a
<i>BSIZE</i>	0.579793 ^c	0.0404332	-0.0663963 ^b	0.0468851
<i>DUAL</i>	-1.807644	0.0539678	0.232888 ^b	0.0288187 ^b
<i>BIND</i>	-5.662909	1.29217 ^c	-0.5667435	0.0468851
<i>Audit</i>	0.3853115	-0.0750068	0.021756	0.001722
<i>REG</i>	35.39565 ^a	-2.312754	0.2058512	0.009015
<i>Size</i>	-0.9275937 ^c	-0.258062 ^b	-1.071371 ^a	-0.1324352 ^a
<i>AGE</i>	-1.50016	0.3052985	0.427897 ^c	0.0549212 ^a
<i>LIQUID</i>	-0.0049001	-0.0006235	0.0015649	0.0001591
<i>LLOSS</i>	-7.810727	1.641924 ^c	0.4583203	0.0627941
<i>LOANS</i>	-29.16361 ^a	0.3565357	2.822712 ^a	0.3162846 ^a
F-statistic	3.95 ^a	1.78 ^c	41.54	43.89 ^a
Adjusted R²	0.2845	0.1521	0.6859	0.8156

The results of the second regression (dependent variable SDROE): we note that the model is globally significant with acceptable adjusted R² (0.15). The size of the bank is significantly and negatively, related to the volatility of the return on equity, which suggests that big banks support less financial risk. Furthermore, the concentration of the capital is positively related to bank risk. Which means that large shareholders are inclined to invest in risky firms in order to extract more private benefits of control. In fact, according to modern financial theory as more risk increases, return on investment will be higher (Sharpe, 1964; Lintner, 1965; Ross,

1976). According to Demsetz (1983), Demsetz & Lehn (1985) as soon as firm's risk increases, the monitoring of large shareholders will be better when they get more shares. The board independence is positively related to bank risk. This result is not surprising when we consider firms with concentrated ownership. Indeed, the existence of large shareholders is considered a substitute to outside directors as disciplinary devices to mitigate the moral hazard of the manager (Adams & Mehran, 2002). We note also that the size of the board, Institutional investors, and audit variable are not significant variables.

The results of the third regression (SD INCOME variable): we consider that the model is globally significant with adjusted R^2 of 0.68. We also note that most of the variables are significant: bank risk, as measured by volatility of income is positively affected by the concentration of the ownership. Institutional investors have a positive and significant impact on the bank risk. According to the OECD's report 2013, Institutional investors, mainly insurance companies, pension funds, and mutual funds are gradually more significant player in financial markets, have been growing allocation to alternative risky assets and have also increased their risk position over the years.

Moreover, the board size is associated negatively with bank risk. This result consistent the model of Blanchard & Dionne (2004), who suggest that the greater the number of directors increases, the use of sophisticated instruments to hedge against the risk. The volatility of earnings increases also with firm activity level as measured by loans. This situation is more likely to be verified in old firms. Furthermore, the bank risk is associated positively with CEO duality, which means that for Tunisian banks with managers-owners, duality plays the same role as management ownership to continue to increase banks' risk.

The results of the fourth regression (dependent variable SDROA): we show that this model is globally significant with higher adjusted R^2 (0.81). Bank risk is positively explained by management ownership, the dual function of the CEO, firm age, and loans. The Dual variable is significant and positively related to the volatility of return on assets. That is to say, when the CEO himself is the Chairman, the bank Risk will increases. In this case, the positive correlation between these two variables reflects a situation of entrenched manager who is much inclined to overinvest bank activities at the expenses of the shareholders. This result is consistent with the work of Thaddeus (2000) who suggests that duality is an undesirable feature since it allows the same person to benefit from a major power in the decision-making process. Cornett et al. (2010) argue that the separation of the CEO from the Chairman of the Board is important in the agency problem. Mamoghli & Dhouibi (2009) have empirically shown that when the leader also held the position of Chairman, Insolvency risk of Tunisian banks increases.

5. Concluding Remarks

Bank governance is of particular interest due to their unique characteristics. Indeed, banks are highly regulated compared to other firms (Adams & Mehran, 2003), during recent years, regulators have focused on this aspect in order to improve the stability and financial security system. The aim of our study was to analyze the relationship between the ownership structure, regulation and bank risk. Previous empirical results are ambiguous: research shows that

regulation has an impact that can be positive or negative on risk taking (Koehn & Santomero, 1980; Kim & Santomero, 1988). Under given conditions, Governance system is considered as a factor of bank risk (Golliard-Le Poder, 2007). Anderson & Campbell (2004) added that external governance variables have rigidity, which gives a greater role to the internal governance including the ownership structure and board structure to play the expected function of monitoring of management by which bank risk will be smaller.

Our empirical evidence is conducted on Tunisian bank sector for the period 2000-2014. The model presented is based on the effect of bank governance as measured by ownership structure, board characteristics, and regulation of the bank risk. The tests show that ownership structure and regulation are positively related to bank risks, which validate our hypothesis. What is unexpected in our estimations is the positive effect of independence of directors on bank risk. This result, gives us the profile of Tunisian banks, with high risk taking. We find evidence to support that more entrenched, and concentrated banks, take more risk. This effect is also obtained with the contradictory influence of the dual position of the CEO and independent directors. Furthermore, our results show that larger banks with greater board size and important regulatory policy become less risky.

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