

# IMPACT OF TERRORISM ON FOREIGN PORTFOLIO INVESTMENT IN PAKISTAN

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## ABSTRACT

**This study explored the long and short run impact of Terrorism on Foreign Portfolio Investment (FPI) in Pakistan using annual data from 1995 to 2013. The stationarity of data was analyzed by using unit root test. The long run relationship was captured using Johansen and Juselius Cointegration test. The short term impact was tested through Vector Error Correction Model. The results revealed significant negative effect of Terrorism on FPI. The results best fit the concept of push and pull theory. The relation of FPI and market size was negative, and highly positive with Trade Openness and Real Interest Rate. There was also significant short term relationship between Terrorism and FPI. This study suggests that careful policies should be implemented for the purpose of minimizing terrorist activities in order to enhance FPI in Pakistan.**

## INTRODUCTION

Terrorism is the main problem faced by Pakistan economy. It hurts both the social and economic life of the people of Pakistan. Due to terrorism, the great amount of foreign financial inflows decreased. It makes economic decrease in foreign direct investment, remittances, exports, tourism and foreign portfolio investment. After 9/11, the situation became severe in Pakistan, in which a large number of people were injured, killed and displaced from the country. The investors now feel hesitation to invest in direct and indirect productions in Pakistan. People feel fear to invest here due to highest risk attached to their physical assets. Any kinds of industry, whether national or international, prefers to invest in a country which is highly secure and where they find large return on investment.

Foreign Portfolio Investment (FPI) is the passive holding of securities such as foreign stocks, bonds or other financial assets, none of which entails active management or control of the securities issued by the investors. Simply FPI is the flows of funds into the country in the form of investments in stocks and bonds of that country by the foreign investors, and is considered to be the short term investment as compared to FDI. There are different factors which affect the flow of FPI into Pakistan. These factors are market size, inflation rate, exchange rate, tax on interest or dividend, trade openness and corruption. Literature suggests that the country having larger market size will attract more FPI

as compared to the country with smaller market size. Similarly interest rate also affect the flow of FPI, like as the country which have high interest rate will encourage more funds in the shape of FPI. The main problem in FP investors is the reversal of flows. They want more profit in a very limited time. If the aim is achievable, they will stay in the economy, otherwise will compel to leave by certain potential risks like greater exchange rate volatility, greater interest rate volatility or by the combine effect of both. The host country also feels afraid of portfolio investors and from the flows of portfolio capital. They are scared about the nature of the portfolio investment because this type of investment is unstable and unrestricted. This may lead to take over the firms which have not well equipped to save from acquisition. On the one side we can think that FPI is the source of inflow but on the other side it is the outflow of funds in the form of dividends and potential exile of capital. The foreigners get huge fund due to FPI without sharing in the actual investment of the host country. The other disadvantages according to Agarwal (1997) includes loss of better management, advance technology and best marketing provided by the big foreign company.

The study follows Push and Pull Theory, which highlights the Push and Pull factors in any economy. The push factors are those factors which push the people from the country with low opportunity to invest to the country with high opportunity of investment. The pull factors are those factors which attract the people to invest in the economy for greater return. These factors

are GDP, Inflation, Employment, Population, Skilled and Unskilled labor, Political instability, Terrorism and etc. For some countries these factors are push factors while for the other are the pull factors. In case of Pakistan, these factors are push factors which tend people to push into the safer economy. The theory says that for a country for which these factors are considered to be push will attract lesser foreign portfolio investors and vice versa. More volatility in exchange rate and inflation discourage the foreign investors to invest in the securities and bonds of that country. Tax rate, either on interest or dividend, influence negatively or positively, the flow of FPI. Similarly the country which has flexible trade policies will attract more FPI as compared to the country which has rigid trade policies. Some developing countries directly issue the bonds into the foreign investors which are considered to be the best mechanism to attract foreign portfolio investment. FPI is more risky as compared to other inflow because it can be reversed at any time and the investors can decide to leave the country they are investing in. This reversal risk is harmful in case of high inflation and exchange rate fluctuation.

FPI has different characteristics which differentiate it from FDI. FPI does not provide the direct ownership of financial assets and doesn't allow the direct involvement in the company's management. Beside these properties FPI is the liquid investment than FDI and one can easily sell off these securities, while in FDI the ownership can't be easily sold. Like FDI and Remittances, FPI also has many importance as a source of financing. It produces new opportunities in the form of new jobs into the people of the country, brings rapid development in the economy and create significant wealth. In Pakistan FPI is the largest source of private capital investment. Different researchers highlight the importance of foreign inflows. Erol (2000); Pazarlioglu and Gulay (2007) describe the different benefits of the foreign capital which include; enhancing the host countries accumulation of capital and the capacity of production bringing new technology and skills, increasing BOP, introducing new sale, marketing techniques, high tax revenue, new business opportunities, employment opportunities and economic development. Agrawal (1997) classified FPI Flows into portfolio equity investment and portfolio debt investment.

This study examines the "Impact of Terrorism on Foreign Portfolio Investment in Pakistan". The control variables are Terrorism, GDP, Inflation, Trade Openness and Exchange rate. The study covers the period from 1995 to 2013. The study is very important for both the policy makers and academic research. It will provide insights to policy makers to make such policies that decrease the terrorism in Pakistan. In academics research

it will be an extension in the literature.

## REVIEW OF LITERATURE

The previous literature identifies the two main suggestion on behalf of the determinants of FPI, the first suggestion include those factors which enhance the demand for foreign exchange, and the other add the factors which motivate the foreign institutional investors to invest in developing countries. In the first set, economic growth, saving, exchange rate, investment gap in developing and foreign exchange reserve are included. The second factor consist of the enhancement of income in developed countries, interest rate differential, trade openness, and behavior of capital market in developing countries as well as the financial development of the developing countries as well.

Calvo et. al. (1993, 1994 and 1996) explained the importance of pull and push factors of foreign inflows. They argued that although in 1990s the pull factors were dominants and were the main sources of foreign inflows, the main determinants were push factors. The authors added that in 1990s the other more important factors for attracting more foreign inflows were low interest rate and creditworthiness of the emerging markets.

Chauhan et. al. (1993) studied the flow of portfolio to Latin America and Asia. They observed that drop in interest rates and the decline in economic activities were important factors while describing capital flows to Latin America and Asia. Their results observed that for Latin America domestic factors are important for portfolio inflows, while for the Asia country specific factors are important than global factors.

Hernández and Rudolph (1995) use a partial adjustment model together with internal and external variables to analyze capital inflows during the beginning of the 1990s. They conclude that domestic factors play an important role and that policy makers should aim to have sound fundamentals in order to attract capital flows. Favoring domestic factors, Claessens et. al. (1998) look at capital inflows in East and Central Europe and former USSR countries in the 1991-1997 period. Their empirical results show the importance of structural reforms as well as the country creditworthiness.

Agarwal (1997) observed the determinants of foreign portfolio investment. He examined the impact of FPI on the six developing Asian countries, including India, Thailand, Korea, Malaysia, and Indonesia. For his study, take the data from 1986 to 1993. According to him inflation rate has negative impact on FPI while the impact of exchange rate is positive, on the other hand foreign direct investment, current account deficit and total foreign trade are insignificant. The theory recommends that capital transfers across boundaries because it

benefits borrowers and lenders smooth or speeds up income and consumption over time, transfer risks and enhances permanent income (Lessard 1986). For the developing countries, to attract foreign capital must have investment opportunities, which are considered profitable according to the standard of the world, and the financial requirements surpass domestic saving. The literature indicates four investment opportunities for the developing countries, first real and monetary income including inflation rate, growth in real income, exchange rate appreciation, and interest rate differential. Second is government policies, third one is risk factors and the fourth is the structure of the financial system of the host country.

Gomus and Gunger (2013) observed the relationship between FPI and macroeconomic variables. The data used for the research were from 2006 to 2012. Different econometric techniques were used. They found that FPI affects the Istanbul stock exchange and exchange rate. Basoglu (2000) described the push and pull factors in developed and developing countries. According to him, low interest rate is the push factor in developed countries, while financial liberalization is a pull factor in developing countries for the boost of FPI. Economic performance is the major pull factor in attracting FPI into the country (Duasa & Kassim, 2009). The impact of market size on the FPI is positive, more FPI is attracted by the larger countries as compared to smaller countries (Amaya Rowland, 2004:24). The proxy used for the market size of the host country is gross domestic product (Erdal & Tataloglu, 2002).

Inflation signifies one of the main threats to investors. From the rise of the inflation rate, the investor hesitate to invest and know that the result would be negative. Fluctuation in exchange rate has an impact on the international investor's sentiments. They may get high or low return due to fluctuation. They can obtain high return by getting more risk of fluctuation. Sudden fluctuation in exchange rate can create hurdle to foreign investment. Hence, this volatility in exchange rate would encourage speculation rather than productive foreign investment (Brink and Viviers, 2003).

Erdal and Tataloglu (2002) define openness in terms of the ratio of exports to imports. Chakarbarti (2001) also used the trade openness as a determinant of foreign inflows. According to him country with smooth trade policies can encourage the foreign inflows as compared to those countries who have rigid trade policies. Ekeocha (2008) studied the long run determinants of FPI in Nigeria. He used the time series data and co integration techniques were applied to examine the relationship between the explanatory variables (market capitalization, sovereign risk premium, real exchange rate, trade openness, investment, real interest rate and level of

financial openness) with dependent variables portfolio investment. He found that FPI was positively related to real interest rate and investment, while negatively related to real exchange rate, market capitalization and trade openness in Nigeria.

Sethi and Patnaik (2005) observed the contribution of capital flows namely the FDI and FPI to the economic performance of a county. They found the positive relationship. Countries with well-developed financial markets gain significantly from Foreign Direct Investment (FDI). By using monthly time series data, they found that Foreign Direct Investment (FDI) is positively affecting the economic growth direct contribution, while Foreign Institutional Investment (FII) is negatively affecting the growth. The empirical analysis using the time series data between April 1995 to December 2004 shows that FDI plays unambiguous role in contributing to economic growth.

Durham (2004) examined the effects of FPI and OFI on economic growth. He used the data of 88 countries from 1977 to 2000. The results were different, some measures found that FPI has no effect while some suggest that OFI has a negative relation with economic growth. Carlos (2006) studied the determinants of foreign inflows into emerging markets. He observed that the large open economies along with high growth rate will attract more funds as compared to the economies with a low growth rate. He added further that sound fiscal policy and normal debt levels will lead to higher level of foreign inflows.

Agarwal (1997) examined inflation rate, real exchange rate, economic activity index and the share of domestic capital, the major determinants of FPI. Filler and Stanisic (2013) found the impact of terrorism on capital inflows. By comparing between FDI and FPI, FDI is more sensitive to terrorism than FPI or other type flows like external debt flows. FDI decreases more as compared to FPI and Remittance in Pakistan from 2003 to 2013 (Anwar & Mughal, 2013). Hence, the terrorist activities influence FDI but the changes in effect is low in case foreign portfolio investment and remittances.

## METHODOLOGY

This study intends to analyze the impact of Terrorism on Foreign Portfolio Investment in Pakistan. The control variables are Terrorism, GDP, Inflation, Trade Openness and Exchange rate and Real Interest Rate. The study covers the period from 1995 to 2013. Proxies are used for different variables, GDP is used as a proxy for Market size, CPI is for inflation and export plus import divided by GDP is for trade openness. For the terrorism, "Terrorism Index" is used which consist of Events,

Fatalities and Injuries. The index is measured as, 0.50 Events, 0.25 Fatalities, and 0.25 Injuries. The data is obtained from SBP, World Development Indicator and Global Terrorism Database.

The model is written as follow,

$$LNFPi = \beta_0 + \beta_1LNGDP + \beta_2LNER + \beta_3LNRIR + \beta_4LNCPI + \beta_5LNT0 + \beta_6LNTIND + \epsilon_t \dots \dots \dots (1)$$

Where, LNGDP is log of GDP, LNER is log of exchange rate, LNRIR is log of real interest rate, LNCPI is log of consumer price index, LNT0 is log of trade openness, LNTIND is log of terrorism index and  $\epsilon_t$  is disturbance term respectively.

To find the long run dynamic relationship between Terrorism and Foreign portfolio investment different econometric techniques are used. These techniques are;

To find the long and short run dynamic relationship between Terrorism and Foreign portfolio investment different econometric techniques have been applied. This particular study adopted Johansen Juselius cointegration technique and Vector error correction model for analyzing the long and short run relationship.

Before going to the main techniques, it is necessary to find the stationarity of the data and this is tested through Unit Root Test. Co integration is used for the exploring of long run relationship among variables. For Cointegration test, it is important that the data is integrated in the same order. ADF and PP test are used for the stationarity of data. These tests are applicable for time series data. The basic form of ADF test is given as follows

$$\Delta V_t = V_t - V_{t-1} + \epsilon_t \dots \dots \dots (2)$$

where “ $V_t$ ” is variable examined, “ $t$ ” is time period, “ $p$ ” is coefficient and “ $\epsilon_t$ ” is the disturbance term. The following equation indicates the regression model,

$$\Delta V_t = (p-1) V_{t-1} + \epsilon_t = V_{t-1} + \epsilon_t \dots \dots \dots (3)$$

In this equation,  $\Delta V_t$  is first difference for the basic variable. For making the data stationery first difference is taken. ADF and PP test have different assumptions, and both have their own application difference from each other. ADF is best than PP test due to term of size and PP test is better than ADF test because of power. Next difference is, for the testing of first order correlation ADF test is used and for higher serial correlation PP test is used. But the measure of calculation for both is same. For cointegration test, it is important to find the lag length criteria which is find through AKAIKE Information Criterion (AIC) and Schwarz Information

Criterion (SIC). The assumption of cointegration is that, if the two series are non-stationery individually, their linear combination might be stationery. The Johansen and Juselius cointegration procedure reviews the long run dynamic relationship between the variables. The null hypothesis is that no co-integration is there among the series. The maximal Eigen-value test gauges the Ho of the existence of “ $r$ ” co-integrating vectors in flow of the alternative (H1) of “ $r+1$ ” co-integrating vectors. The statistic of max-Eigen test is given as:

$$\lambda_{max} = -T \ln (1 - \lambda_{r+1}) \dots \dots \dots (4)$$

Where “ $T$ ” signifies the observations and  $\lambda_{r+1}, \lambda_{r+2} + \lambda_{r+3} \dots \dots \dots, \lambda_n$  represents the  $n-r$  smallest squared canonical correlations. Trace statistics test evaluates the Ho of the existence of “ $r$ ” co-integrating vectors in contradiction of the alternative (H1) of “ $r+1$ ” co-integrating vectors. The statistic test is given as.

$$\lambda_{trace} = -T \sum \ln (1 - \lambda_i) \dots \dots \dots (5)$$

Error Correction Model (ECM) is used to inspect the short-run dynamics. According to Eagle and Granger, short run dynamic relationship can be measured when dependent and explanatory variables are co-integrated. This model explains short-run disequilibrium i.e. deviation from the long-run relationship and its adjustment in time. The sign of the ECM may either be positive or negative. The positive sign indicates unstable equilibrium, whereas the negative sign indicates stable equilibrium. Moreover, ECM term can be either significant or insignificant. The system is said to be equilibrium i.e. there are no short term deviation, when the term of the ECM is insignificant. When the term of the ECM is significant then it indicates the existence of short-run relationship. In ECM the speed of adjustment in a given period towards the long-run equilibrium is indicated by the ECM value. Equation (6) is re-arranged to get into VECM as under:

$$\Delta Z_t = a_0 + \sum_{j=1}^{k-1} \beta_j \Delta Z_{t-j} + \delta Z_{t-k} \dots \dots \dots (6)$$

Where  $\delta = -1 + \sum_{i=j+1}^k \beta_j$

In equation  $\Delta Z_t$  is first difference operator for the underlying variable.

**RESULTS AND DISCUSSION**

To find the stationarity of data the unit root test is used. Table 1 indicates the ADF and PP tests for LnFPI, LnGDP, LnER, LnRIR, LnCPI, LnTO and LnTIND.

ADF test shows that all the variables are stationary at first difference, as the series is I(1). As the variables are stationary at the same level so we can use the Johansen Cointegration test to find the long term impact of Terrorism on FPI in Pakistan

Schwarz Criterion (SC) is used, and it is minimum at lag 2, which indicates that this lag is fit for testing co-integration between Terrorism and Foreign Portfolio Investment. Table 2 shows the lag criteria.

**TABLE 1**  
**Unit Root Test**

Variables	ADF Test		PP Test	
	At Level	At first difference	At Level	At first difference
LNFPI	-0.2602	-8.4115	-2.4179	-4.4893
LNGDP	-2.3353	-5.5762	-2.518	-11.487
LNCPI	-2.2131	-3.6742	-1.2818	-3.0432
LNT0	-1.3844	-4.1007	-1.6494	-10.385
LNER	-0.4586	-3.6413	-1.0126	-8.6857
LNRIR	-1.5959	-5.3737	-2.1902	-11.529
LNTIND	-0.9212	-4.4332	-1.5316	-10.469
Critical Values				
1% level	-3.461	-3.461	-3.4591	-3.4592
5% level	-2.8749	-2.8749	-2.8741	-2.8741
10% level	-2.5745	-2.574	-2.5735	-2.5736

**TABLE 2**  
**Selection of lag order**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	58.695	NA	1.05E-09	-0.814	-0.657	-0.7504
1	2276.7	4156.72	1.53E-24	-34.97	-33.718	-34.463
2	2409.8	234.4*	4.10e-25*	-36.29*	-33.94*	-35.340*
3	2442.4	54.0382	5.39E-25	-36.03	-32.59	-34.637
4	2464.1	33.504	8.56E-25	-35.6	-31.06	-33.762
5	2481.4	24.7765	1.49E-24	-35.1	-29.466	-32.817
6	2491.6	13.4641	2.98E-24	-34.49	-27.757	-31.759

\* indicates lag order selected by the criterion  
LR: sequential modified LR test statistic (each test at 5% level)

For finding long run impact of Terrorism on Foreign Portfolio Investment Johnson and Juselius Cointegration Test is carried out. The result of Trace Statistics and Maximum Eigenvalue is shown in Table 3 and 4.

**TABLE 3**  
**Trace Statistics**

No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Prob.**
None *	0.207931	137.5275	125.6154	0.0076
At most 1 *	0.186658	103.7270	95.75366	0.0126
At most 2 *	0.161575	73.76958	69.81889	0.0234
At most 3 *	0.146313	48.21623	47.85613	0.0462
At most 4	0.095387	25.27856	29.79707	0.1517
At most 5	0.066407	10.74260	15.49471	0.2278
At most 6	0.005358	0.778995	3.841466	0.3774

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level, \* denotes rejection of the hypothesis at the 0.05 level  
\*\*MacKinnon-Haug-Michelis (1999) p-values

**TABLE 4**  
**Maximum Eigen Value Statistics**

No. of CE(s)	Eigenvalue	Max-Eigen Statistic	Critical Value	Prob.**
None	0.207931	33.80044	46.23142	0.5382
At most 1	0.186658	29.95743	40.07757	0.4266
At most 2	0.161575	25.55335	33.87687	0.3486
At most 3	0.146313	22.93767	27.58434	0.1762
At most 4	0.095387	14.53596	21.13162	0.3227
At most 5	0.066407	9.963603	14.26460	0.2143
At most 6	0.005358	0.778995	3.841466	0.3774

Max-eigenvalue test indicates no cointegration at the 0.05 level, \*denotes rejection of the hypothesis at the 0.05 level  
\*\*MacKinnon-Haug-Michelis (1999) p-values

**TABLE 5**  
**Normalized Cointegration Equations**

$\Delta$ FPI	$\Delta$ GDP	$\Delta$ CPI	$\Delta$ ER	$\Delta$ TO	$\Delta$ RIR	$\Delta$ TIND
1	3.33368	38.681	-41.0194	4.09125	-25.6572	7.10367
SE	(1.11176)	(12.2055)	(13.841)	(6.0746)	(12.6857)	(1.57448)

Table 3 show that there exist 4 co-integration equations at 5% significant level. Thus there exist long run relationship between terrorism and Foreign Portfolio Investment. The normalized Cointegration equation is shown in Table 5.

The long run equation is estimated as

$$\Delta\text{FPI}=3.336\Delta\text{GDP}+38.681\Delta\text{CPI}-41.019\Delta\text{ER}+4.091\Delta\text{TO}-25.657\Delta\text{RIR}+7.103\Delta\text{TIND}$$

The focus of this study is on  $\Delta$ FPI as the dependent variable, therefore evaluating the long run impact of  $\Delta$ GDP,  $\Delta$ CPI,  $\Delta$ ER,  $\Delta$ RIR,  $\Delta$ TO, and  $\Delta$ TIND on Foreign Portfolio Investments. The co-integration vector is normalized with respect to  $\Delta$ FPI.

$$\begin{array}{llll} \Delta\text{FPI} = & -3.336\Delta\text{GDP} & -38.681\Delta\text{CPI} & +41.019\Delta\text{ER} \\ & (-2.998) & (-3.2100) & (2.9636) \\ & -4.09\Delta\text{TO} & +25.657\Delta\text{RIR} & -0.858\Delta\text{TIND} \\ & (-0.6735) & (2.0225) & (4.5117) \end{array}$$

The results show that there exists a long run relationship between terrorism and foreign portfolio investment in Pakistan. Terrorism index has significantly negative relationship with Foreign Portfolio investment which is according to push and pull theory. This relationship shows that when there are terrorist attacks in any country, like Pakistan, investors will not invest, and will try to move toward safer economy where they get high rate of return on investment.

The relationship of FPI with market size was found negative and highly significant. The situation is against common sense, because when the market is favorable for investment, the people will invest more, but Pakistani Market is like a Casino. Sometime large volatility exists in the market from little events, while, sometime small volatility takes place with large events. It means the market is different in different situations. For example, when an event takes place in Karachi, the stock exchange fluctuates highly, while the operation in North Waziristan has no impact on Karachi stock exchange. FPI has negatively significant relation with CPI. It means that when CPI increases the people will hesitate to invest in such economy. The relation of FPI with ER and RIR was found positive and highly significant.

**TABLE 6**  
**Vector Error Correction Model**

Error Correction:	CointEq1	Standard error	T-Value
D(FPI)	0.004076	0.01197	0.34054
D(LNGDP)	-0.00483	0.00368	-1.314
D(LNCPI)	0.00015	0.00013	1.14452
D(LNTO)	-0.00153	0.0006	-2.5492
D(LNER)	0.000156	0.00016	0.99755
D(LNRIR)	0.000412	0.00031	1.33159
D(TIND)	0.005955	0.00264	2.25409

Table 6 show that there exists a positive relationship between terrorism and FPI, but the result is highly significant. LNFPI and LNTIND have short term disequilibrium. The results show that 0.59% disequilibrium is adjusted in one period. The estimated coefficient of terrorism index is 0.005955 and is significant. We also found evidence of short run positive liaison between trade openness and Foreign Portfolio Investment. The magnitude of other variables were found to have no effect on FPI in the short run.

## Conclusion and Recommendations

This study analyzed the long run & short run impact of terrorism on Foreign Portfolio Investment in Pakistan considering annual time series data 1995-2013. For terrorism, an index was made, which was the combination of fatalities, deaths and injuries. Johansen co-integration test was applied to examine the long run impact of terrorism on FPI, while short run effect has been examined via vector error correction model. The analyses of co-integration show evidence of significant negative relationship between terrorism and FPI in Pakistan. Similarly, short run statistically significant relationship between FPI and terrorism index has been confirmed through vector error correction model. The result is according to the Push and Pull theory. So, the results revealed that terrorism is a push factor for Pakistan. It means that when terrorism increases in Pakistan, FPI decreases because investors will feel loss in their investments, and will have a desire to move toward secure economy. Other variables, with market size (GDP), the impact was negative. With the inflation the impact was negative, which means when there is inflation in Pakistan, investors will not invest here. So, inflation is push factor

which pushes the investors from being investing here. FPI has significant positive relation with real interest rate, it means that when the interest is high, the people will feel high return and will have desire to invest more.

This study is important for policy makers and academic literature. For policy maker it is important in a sense that it will provide a bridge to them to remove or decline terrorism that investors come here to invest in Pakistani markets. While from academic point, of view it is extension in literature. Beside this, the study has certain limitations. In this study, main focus was given to Terrorism with respect to FPI, but there were also some other factors which decreases or increases the flow of FPI to Pakistan, like political instability, corruption etc. Sometimes data availability is also a problem for a researcher.

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