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## Article

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# Private Capital inflow and Growth in Former Soviet-bloc Countries: Roles of Stock Market and Demand-side Macroeconomic Policy

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## Abstract

This paper contributes to the empirical literature by investigating the impact of private capital inflows on economic growth across former Soviet-bloc countries between 1990 and 2015. Roles of the stock market and of demand-side macroeconomic policy are investigated using panel data analysis. The result suggests that though foreign direct investment (FDI) contributing relatively more to economic growth than foreign portfolio investments (FPI), it interacts with stock market trading to negatively influence growth. Final Consumption Expenditure, Inflation, and Gross Savings have negative influences on growth. Our results support the notion that private capital inflow does not allowed to provide sufficient capital to local savings and growth, which is a sign of the crowding-out effect. We suggest that the demand-side macroeconomic policy and stock market activity should tailored more to support economic growth.

JEL Classification: C23, F21, F43

Keywords: private capital flow, demand-side macroeconomic policy, economic growth, panel data, generalized method of moments (GMM), former Soviet-bloc countries

## 1. Introduction

Most of the former Soviet states began the transition process to a market economy in 1990–1991, they made great efforts to restructure their economic systems to free market economies, these restructuring processes triggered out many negative changes, with GDP falling by more than forty percent, spending in health, education, and other social programs are reduced. By 1995, these negative declines are reversed with the cumulative effect of market reforms, and the GDP began to recover in most of these states. This research examines the roles of financial market and the government's demand-side policy as intermediaries that can propagate the influence of capital inflow on economic growth. We use data on 10 former soviet-bloc transition countries (see footnote<sup>1</sup> for the names of these countries) between 1990 and 2015 and conduct tests specifications within this block to endorse and support the result.<sup>2</sup>

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<sup>1</sup> Transition European countries are new European countries that have emerged from former Soviet-bloc countries: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia.

<sup>2</sup> A similar econometric test was conducted for the period 1995–2012, and similar results were obtained, but the result are not reported to save space in this paper and are available upon request.

Many previous studies have confirmed that private capital inflow has a positive influence on economic growth and promotes economic performance. For example, Borensztein et al. (1998) indicate that capital inflows have positive impact on local savings and investment, leading to the crowding-in effect rather than the crowding-out effect, resulting in an increase in knowledge spill over and market efficiency. Similar results can be found in Perrault (2002), Vo (2010), Choong et al. (2010) and Kinda (2012).

The study is different from previous studies by extending the “Lucas paradox” approach by examining missing important variables such as physical infrastructure and financial development. The literature also supports that the domestic financial market and the demand-side macroeconomic policy are both important non-linear channels that stimulate economic growth. The demand-side policy has direct effects on economic growth, as well as indirect effects by stimulating saving and investment. In this way, a proper demand-side policy is considered as a channel through which investors minimize risk. On the other hand, some previous studies McKinnon and Pill (1997), Calvo (1998), Reisen and Soto (2001) and Kose et al. (2004) show that the risks associated with private capital flow may have negative impact on economic growth in host countries.

Given that these countries examined in this study are emerging economies, we examine whether economic growth in these countries has been led by the stock market and/or demand-side macroeconomic policy reforms, allowing for non-linear relationship between economic growth and capital inflow. Under this context, we do the following: First, we examine the effect of private capital inflow on growth. Private capital inflow is measured using foreign direct investment (FDI) and foreign portfolio investments (FPI). Second, given that the literature support the notion that the causation between private capital inflow and economic growth is better supported when there are sound economic and financial policies implemented, we examine how financial policy and demand-side macroeconomic policy influence the relationship between private capital inflow and economic growth. Consumption expenditure is used as a proxy for fiscal policy, and inflation is used as a proxy for monetary policy in order to measure the effect of demand-side macroeconomic policy on growth. The government’s stabilization policy is considered to be the main aspect that can create an environment conducive to capital accumulation of saving and investment. Prior studies have argued that a government’s fiscal policy and monetary policy can both be considered indicators of economic stability.

Finally, some previous studies conclude that for private capital inflows to be beneficial to economic growth, the following important mechanisms must first be in place, human capital (De Mello 1997), trade policy (Bhagwati 1978), technology spillovers (Barro and Sala-i-Martin 1995), and financial development and economic policy (Greenwood and Jovanovic 1990; Levine and Zervos 1998a,b). Many of these studies found that both stock market capitalization and stock market liquidity has been found in the literature to affect economic growth directly and indirectly through investment and physical capital accumulation.<sup>3</sup>

To examine how domestic financial market influence the relationship between economic growth and capital inflows, both stock market capitalization as percentage of GDP (MarketCapitalization) and stock market total value traded as percentage of GDP (StockTrading) are used as proxy for domestic financial market. Both proxies are

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<sup>3</sup> See also Kularatne (2002) and Levine (1997).

interacted with both types of capital inflow. The following interaction terms are included in the regression, (FDI\*MarketCapitalization), (FDI\*StockTrading), (FPI\*MarketCapitalization), and (FPI\*StockTrading). In addition, to further authenticate our findings in this study, we control for interaction between gross saving as a percentage of GDP (GrossSaving) and both types of capital inflow by using the following interaction terms: FDI (-1) \* GrossSaving and FPI (-1) \* Gross saving, the government's stabilization policy is considered to be the main aspect that can create an environment conducive to capital accumulation of saving and investment that generated through the flow of private capital.

A set of "free" control variables appear in every growth regression, these include the initial level of income, the initial education rate, trade, and average population growth. Base on the availability of the data and initial statistical specifications tests, we control for the following set of control variables: GDP per capita, Purchasing Power Parity (PPP), in current US dollars (GDP per Capita); annual percentage change in the population (PopulationGrowth); trade (Trade), measured by both exports and imports as a percentage of GDP; education (Education), measured by secondary education, pupils; and saving (Gross saving) measured by gross saving as a percentage of GDP.

Several features of this study separate its contributions from the existing body of literature on the subject. First, we examine the mechanisms or channels through which private capital inflows and economic growth can interact. Second, we focus on a developing emerging market that had suffered under financial and institutional repression for a long period before they straighten their macroeconomic policies. Third, given the data limitation, we use dynamic panel data models. Specifically, generalized method of moments (GMM) technique used to deal with the endogeneity and other econometric problems. Finally, private capital flows is considered as a main channel of stimulating economic growth in Former Soviet-bloc Countries.

This paper is organized as follows. Section 2 of this paper provides a review of existing literature. Section 3, develops a theoretical framework and the theory underlying in this study. In section 4, the results are presented and explained. Section 5 summaries the conclusion drawn from this study.

## 2. Literature Review

Previous empirical studies (see Rao (2015) for a review<sup>4</sup>), there is a mixed support for the hypothesis that FDI has a positive and significant impact on economic growth in developing countries (Elmawazini et al. 2016)<sup>5</sup>. Borensztein et al. (1998) examine the effect of FDI on growth using data on FDI flows from developed countries to 69 developing countries. They indicate that FDI only contributes to growth when the host economy has a minimum absorptive capability level (e.g. minimum human capital level).

Reisen & Soto (2001) conclude that short-term capital inflows generate bankruptcies and output losses, but long term capital inflows generate and stimulate growth. Similar results can be found in Vo (2010) and Choong et al. (2010).

The negative role of massive private capital inflows in economic performance and growth are indicated in empirical literature. McKinnon and Pill (1997) draw attention to economic liberalizations and over-borrowing may harm economic development. In

<sup>4</sup> See also Görg and Greenaway (2004)

<sup>5</sup> See also Elmawazini (2014) and Iwasaki and Suganuma (2015)

addition, Portfolio investment and FDI, the main components of financial globalization, widen the income inequality within countries (Elmawazini et al. 2013).

On the other hand, some previous studies suggest that for private capital flows to be beneficial to economic growth, important mechanisms through which private capital flows affect economic growth must first be in place. For example, De Mello (1997) suggests that for FDI to affect growth, the recipient country must attain a certain level of human capital that allows it to benefit from productivity spillovers from foreign investment. This reinforces the development threshold assumption, where the impact of FDI on growth in a host country depends on the scope for efficiency spill over to domestic firms. Similar results can be found in Elmawazini (2014), Barro and Sala-i-Martin (1995), Bhagwati (1978)). Recently, Tidiane (2012) assessed the drivers of FDI and portfolio investment using simultaneous equations. He investigates why capital does not flow to developing countries that have a higher marginal return. It also examines the determinants of private capital flows, considering the net flow of FDI, portfolio investments, and debts, controlling for the determinants of physical infrastructure, financial development, capital control, and banking crises.

In summary, the empirical literature reveals that there is a mixed support for the hypothesis that FDI has a positive and significant impact on economic growth in developing economies. This could be explained by the following four points. Firstly, some previous studies have econometric and measurement problems (Newman et al. (2015). Secondly, the effects of FDI mainly depend on host country absorptive capacity (see Elmawazini (2008) and, Farla et al. (2016), Elmawazini, (2012), and Kosová (2010)). Thirdly, many previous studies did not distinguish between high quality FDI and low quality FDI (Alfaro and Charlton, 2013)<sup>6</sup>. Fourthly, many previous studies focus only on the impact of FDI on one or two economic variables without providing the overall impact of FDI on host countries (Rao, 2015). This makes these previous studies are not helpful for policy makers. To overcome this limitation, this study extends the “Lucas paradox” approach, by considering not only economic fundamentals and capital market imperfections but also integrating important variables such as physical infrastructure and financial development.

### 3. Theoretical Framework

In this section we will theoretically model the link among economic growth, stock markets, and macroeconomic policy with foreign capital inflows. The neoclassical approach to growth accounting measures the contribution of different factors, namely capital and labour, to economic growth, mitigating an economy’s technological progress. This approach is useful in modelling the link between private foreign inflows and economic growth under different absorptive capacities and economic policies, and gives insights into the long-term potential economic growth of individual countries, or group of countries. Equation 1 is the Cobb–Douglas production function:

$$Y = AK^{\alpha}L^{\beta} \quad (1)$$

<sup>6</sup> See also Elmawazini (2015) and UNTCAD (2006).

Where:  $Y$  is the output;  $A$  is the Solow residual or total factor productivity (TFP),  $\alpha$  is the output elasticity of  $K$  (capital), and  $\beta$  is the output elasticity of  $L$  (labor), which is equal to  $(1 - \alpha)$ . The application of constant returns to scale has been implemented in empirical literature for large developed and developing economies in various periods during the last two centuries. Equation 2 is the natural logarithm of equation 1

$$\ln(Y) = \ln(A) + \alpha \ln(K) + \beta \ln(L) \quad (2)$$

Next, we take the first differences of Equation 2 which yields Equation 3:

$$\frac{\Delta Y}{Y} \approx \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1 - \alpha) \frac{\Delta L}{L} \quad (3)$$

We use Equation 3 in this study. In Equation 3, the percentage growth in real output, or economic growth, is shown as  $\frac{\Delta Y}{Y}$ , and is decomposed into the following components:  $\frac{\Delta A}{A}$  is growth in  $A$ ;  $\frac{\Delta K}{K}$  is the growth in capital stock;  $\frac{\Delta L}{L}$  is the growth in labor input;  $\alpha$  is the output elasticity of capital; and  $1 - \alpha$  is the output elasticity of labour, where  $0 < \alpha < 1$ .

We assume that the growth in  $A$  can be due to effective monetary and fiscal policies. The robustness and simplicity of the model in this study can be tested against the complex and important case of valuing the equity markets and demand-side macroeconomic policy, as well as how these variables interact with private capital inflows to influence total factor productivity and growth in the former Soviet-bloc countries.

#### 4. Results and Interpretations

To directly controlling for a set of growth determinants, we control for the direct and indirect influences of stock market on economic growth, both Market Capitalization and Stock Trading are used. To examine how domestic stock market influences the relationship between private capital inflow and economic growth, both Market Capitalization and Stock Trading are used as proxy for domestic stock market. Both proxies are interacted with both types of private capital inflow. The following interaction terms are included in the regression;  $FDI^* \text{ Market Capitalization}$ ,  $FDI^* \text{ Stock Trading}$ ,  $FPI^* \text{ Market Capitalization}$ ,  $FPI^* \text{ Stock Trading}$ ,  $FDI^* \text{ Gross Saving}$  and  $FPI^* \text{ Gross saving}$ .

To come up with a reliable result, first, we do different specifications and testing to select a best initial model with significant variables for economic growth. Second, we use fixed effects and the GMM methods which are commonly used to deal with econometric problems (e.g. endogeneity problem). See. There are controllable variables that appear in almost every regression that dealing with economic growth models. The most common usable controllable variables in many growth regressions are initial level of income, gross investment, education level, and population growth<sup>78</sup>. We set up an

<sup>7</sup> See Hsiao et al. 2002 for more details.

initial model to include the initial level of real income, population growth, and gross investment, and then we add more control variables to the initial model to come up with a relatively more specified model. Second, to deal with the econometric problem of heteroskedastic errors of unknown functional form, we use the dynamic panel GMM technique to determine the efficient estimators, which, in turn, leads to correct inferences. The empirical results are summarized in Tables (1) and (2).

**Table -1 Panel Growth Regressions of Former Soviet-bloc Countries**

<b>Variables/Model</b>	<b>Model-1</b>	<b>Model-2</b>	<b>Model-3</b>	<b>Model-4</b>	<b>Model-5</b>
Constant	(24.8626)**	(34.2423)***	(62.7479)***	(98.5625)***	(95.9512)***
GDP per Capita	(-0.0001)**	(-0.0006)***	(-0.0007)***	(-0.0009)***	(-0.0007)**
Population Growth	(-0.0006)**	(-0.0001)***	(-0.0000)***	(-0.0000)*	(-0.0000)
Gross Saving	(0.1142)	(0.1099)	(-0.0757)	(-0.4230)***	(-0.3910)**
Trade		(0.1493)**	(0.1452)***	(0.1218)***	(0.1167)*
Education		(0.0006)	(0.0001)	(-0.0000)	(-0.0000)
Consumption Expenditure			(-0.3549)**	(-0.8919)***	(-0.8878)***
Inflation			(-0.0129)**	(-0.0111)**	(-0.0109)***
FDI				(0.0610)	(0.0452)
FPI				(0.0001)	(-0.0000)
Market Capitalization					(0.0095)
Stock Trading					(-0.0361)
N	10	10	10	10	10
T	25	25	25	25	25
Adj. R <sup>2</sup>	0.052	0.209	0.258	0.377	0.356
Residual Test					
Lagrange multiplier test on the residuals	(6.4744)***	(6.0995)***	(0.7677)	(4.2982)**	(2.5742)*
LM-NR <sup>2</sup>	-19.811	-22.034	(0.1293)	-12.924	-12.897

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively

Table 1, column 2 displays the results for the first model, Model 1. This includes the initial GDP per Capita, Population Growth, and Gross Saving as independent variables, and the GDP Growth as the dependent variable. The result shows that the both GDP per Capita and Population Growth are significant and have negative coefficients, Gross Saving has a positive and non-significant coefficient. Adj. R<sup>2</sup> is small in value. Column 3 shows Model-2, in which Trade and Education are added to Model-1. The results show that the coefficients of Trade are significant, positive and large in values, where Education coefficient is non-significant, and is almost equal to zero, all other coefficients stay the same without any changes in them. Column 4 shows Model-3. In this model we examine the role of demand-side macroeconomic policy on growth, controlling for Consumption Expenditure and Inflation. These two variables represent the demand-side policy effects on growth. Fiscal policy can be proxied by consumption Expenditure and monetary policy can be proxied by Inflation. The government's stabilization policy is considered a main factor that can make an environment conducive for saving, capital accumulation, and investment. The results for these two variables show that both variables have negative and highly significant coefficients.

<sup>8</sup>Levine and Renelt (1992)

To test the direct influence of FDI and FPI on growth, we add the two variables to create Model 4. The result shows that the both coefficient of FDI and FPI are insignificant, GDP per Capita coefficient is significant and negative, Population Growth turn insignificant, and Gross Saving and Trade are both are significant and have negative coefficients, Adj.  $R^2$  increases from .26 to .38. To test the direct influence of the stock market on economic growth, we add two stock market variables, Market Capitalization and Stock Trading. The results are indicated in column 6 in Table-1 (Model 5). Both variables have non-significant coefficients, GDP per Capita coefficient is significant and negative, Population Growth is non-significant, and Gross Saving and Trade are both are significant and have correct signs, Adj.  $R^2$  decrease a little in value. It is clear from the results of all models shown in Table-1 that majority of the variables maintain consistent relationships with the dependent variable, the economic growth.

**Table-2: Panel Growth Regressions with Interaction Terms for Former Soviet-bloc Countries**

<b>Variables/Model</b>	<b>Model-6</b>	<b>Model-7</b>	<b>Model-8</b>	<b>Model-GMM</b>
Constant	(86.4533)***	(88.5523)***	(81.2096)***	(93.7621)***
GDP per Capita	(-0.0007)**	(-0.0008)**	(-0.0007)***	(-0.0008)**
Population Growth	(-0.0000)	(-0.0000)	(-0.0000)	(-0.0000)
Gross Saving	(-0.3717)**	(-0.3906)**	(-0.3335)***	(-0.4109)**
Trade	(0.1215)*	(0.1280)*	(0.1248)*	(0.1218)*
Education	(-0.0000)	(-0.0000)	(-0.0000)	(0.0000)
Consumption Expenditure	(-0.8718)***	(-0.8722)***	(-0.8306)***	(-0.9226)***
Inflation	(-0.0095)***	(-0.0094)***	(-0.0093)**	(-0.0099)***
FDI	(0.4361)***	(0.4034)***	(0.4830)**	(0.4415)**
FPI	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Market Capitalization	(0.0116)	(0.0047)	(0.0705)	(0.0086)
Stock Trading	(0.0739)	(0.0531)	(-0.2319)	(-0.0691)
FDI*Market Capitalization	(-0.0021)	(-0.0013)	(-0.00081)	(-0.0018)
FDI*Stock Trading	(-0.0164)***	(-0.0155)***	(-0.0157)***	(-0.0160)***
FPI*Market Capitalization		(0.0001)	(0.0000)	(-0.0000)
FPI*Stock Trading		(-0.0000)	(-0.00004)	(-0.0000)
FDI*Gross saving			(-0.0050)	(-0.0023)
FPI*Gross saving			(0.0000)	(-0.0000)
N	10	10	10	10
T	21	21	21	21
Adj. $R^2$	0.409	0.412	0.404	0.412
Residual-Test				
t-test	(2.5659)*	(2.5339)*	(2.5786)*	
LM-NR <sup>2</sup>	-19.811	(0.9456)	-10.768	
J-stat				(1737.34)***

\*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.



Table-2 shows the results for the influence of the interaction between both type of private capital inflow and stock market variables on economic growth, the influences of FDI\* Market Capitalization, FDI\* Stock Trading, FPI\*Market Capitalization and FPI\*Stock Trading on economic growth. The results are indicated in Table-2, column 2 and column 3, under Model-6 and Model-7. The results confirm that that only the interaction between FDI and stock trading “FDI\* Stock Trading” has a negative and significant coefficient, all other interaction coefficients are not significant. The FDI variable coefficients, in these two models, turn significant and positive and their values have increases. The Adj.  $R^2$  also increases in value.

Finally, we control for the influence of the interaction between private capital inflow and gross saving. We add the following interactions terms FDI (-1)\* Gross Saving and FPI (-1)\* Gross Saving to variables in Model-7, the result are displayed in column 4 in Table-2. The result shows that that only the interaction between FDI and stock trading “FDI\*Stock Trading” has a negative and significant coefficient, all the other interaction coefficients are not significant. The FDI variable coefficient, in this model is significant and positive and its value has increased. The Adj.  $R^2$  increases in value. The results from all these models in Table-2, Model-6, Model-7 and Model-8 are consistent. It shown that only the FDI and interaction between FDI and Stock Trading have influences economic growth, FDI has a positively influence economic growth while the interaction between FDI and Stock Trading has a negative influence on economic growth, influences that much overlap with the negative effect of demand-side macroeconomic policy on growth, both Consumption Expenditure and Inflation have negative and highly significant coefficients, in all models rested in Table-1 and Table-2, implying that the relationship between private capital inflow and growth may be non-linear, and that economic growth may also be influenced by indirect channels that interacting with stock market and economic policy. The government’s stabilization policy is considered to be the main aspect that can affect FDI and economic growth.

We follow Mollick et al. (2006), to test for serial correlation, we applied two residual tests: The test results are reported at end of each column, and confirm that neither heteroscedasticity nor serial correlations are critical. The two tests (Lagrange multiplier test and LM-NR<sup>2</sup>) became less significant once the model is fully specified. Finally, to deal with heteroskedastic errors of unknown functional form in the estimation that may contaminate the results, we use the dynamic panel GMM technique to achieve efficient estimators. The results for the GMM model are displayed in Table 2, column 5, and the results for the GMM confirm the results of the panel data testing. The overall test results from the two econometric methods, namely the panel data fixed effect model and the GMM model, confirm the same results. This implies that the relationship between demand-side policy, economic growth, and investment may be non-linear. Under this situation, the influence of investment and the interactions of investment with other variables that influence economic growth will reveal more about the effect of government policy on growth in these countries.

We also tested if the FDI crowd out domestic investment by testing the effect on gross fixed capital formation. A positive coefficient of FDI indicating that FDI is benefiting the former Soviet-bloc countries while in the same time the Gross Saving has a significant and an increasing negative influence on economic growth and FDI is interacting with stock market trading to negatively influence economic growth. The results are robust by controlling the main determinants of economic growth as indicated

in Levine and Renelt (1992). The econometric analyses conducted in this study reveal a possible dominant crowding out effect.<sup>9</sup>

## 5. Conclusion

This paper investigates the relationship between private capital inflow, stock markets, demand-side macroeconomic policy, and economic growth, looking for channels through which a host country can benefit from private capital inflow. We examine ten countries in the former Soviet-bloc countries, and the data cover the period between 1990 and 2015. The results show that in these countries, both FDI and FP has a positive influence on growth, but stock market trading, final consumption expenditure, and inflation all have negative influences on economic growth. Private capital inflow variable, FDI a positive impact on economic growth, but interact with stock market liquidity to negatively influence growth. Saving has a negative influence on growth Education has no contribution towards growth.

It is clear that the impact of private capital inflow on economic growth is contingent on stock market development and on the macroeconomic policy in these economies private capital flow may have a real impact on growth, but the full effect occurs when the stock market is more active and efficient in accumulating capital that increase saving and investment. Similarly, economic growth may be influenced by the liquidity channel. These results indicate that, depending on the demand-side macroeconomic policy may be is useful, but un-sanitized financial intermediaries reactions many alter the composition the wealth in the market in the way that unfavourable to capital accumulation, savings and growth. These issues can be resolved by coordinating both economic and financial policies to direct foreign capital inflow to accumulate capital to increase total saving to crowd in capital to increase investment that support economic growth. An increase in this effect will increase the knowledge spill over, capital accumulation and economic growth.

The negative relationship between demand-side macroeconomic policy and growth is well established in this study. Sound fiscal and monetary policies create a conducive climate for private investment to create platform for economic growth. Thus, policymakers need to design and implement an appropriate combination of financial regulations and demand-side macroeconomic policy to achieve lower price uncertainty to increase the benefit from private capital inflow. The important issues facing the policy makers in these countries are designing sound policies that promote financial and macroeconomic stability and a macroeconomic environment to attain sustained economic growth.

The present financial crises, in the global financial system, have shown that economic openness is not sufficient to post economic growth. Specifically, it is essential for developing and emerging countries to have sound and transparent macroeconomic policies and a good governance to fully benefit from private capital inflow. What is finally recommended is a full and complete financial and economic reform system that designed to direct and allocate resource to institutions suitable for speeding up economic growth.

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<sup>9</sup> See also Harrison and McMillan (2003)

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