

EFFECTS OF MAJOR MACROECONOMIC INDICATORS ON EMERGING MARKETS BOND INDEX

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ABSTRACT

This paper examines the effects of major macroeconomic fundamentals on emerging market bond index spreads by using a panel of 25 emerging market countries' bond index spreads and a set of macroeconomic indicators between 2000 and 2009. The findings of the study suggest that there is a positive relationship between bond index spread and foreign direct investment, inflation and a negative relationship between bond index spread and GDP, reserve in total external debt. Major determinants of the emerging markets bond index are determined by using regression analysis based on ordinary least squares method has been applied consisting of fixed effect model, random effect model, but Hausman test showed that fixed effect model is more appropriate.

Keywords: Emerging Markets, Emerging Markets Bond Index Spreads, Panel Data Analysis.

Jel Classification: G12, G15, C33.

BAŞLICA MAKROEKONOMİK GÖSTERGELERİN GELİŞMEKTE OLAN ÜLKELER TAHVİL ENDEKSİ ÜZERİNDEKİ ETKİSİ

ÖZET

Bu çalışma 2000-2009 yılları arasında 25 gelişmekte olan piyasanın tahvil endeksi ile bir dizi makroekonomik göstergeleri kullanarak makroekonomik temellerin gelişmekte olan piyasalar tahvil endeksi üzerindeki etkisini incelemektedir. Çalışmanın bulguları, tahvil endeksi ile doğrudan yabancı sermaye yatırımı ve enflasyon arasında pozitif bir ilişki olduğunu, tahvil endeksi ile GSYİH, toplam dış borç stoğu arasında negatif bir ilişki olduğunu göstermektedir. Gelişmekte olan ülkeler tahvil endeksinin başlıca belirleyicileri sabit etki modeli ve rasgele etkiler modelini içeren sıradan en küçük kareler yöntemine dayalı regresyon

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analizi ile belirlenmiş, Hausman testi sabit etki modelinin daha uygun olduğunu göstermiştir.

Anahtar Kelimeler: Gelişmekte Olan Ülkeler, Gelişmekte Olan Ülkeler Tahvil Endeksi, Panel Data Analizi.

JelKodları: G12, G15, C33.

INTRODUCTION

Emerging countries began to fundraise increasingly with sovereign debt securities as of 1990s. The issuance of emerging-market bonds denominated in the U.S. dollar soared to about \$375 billion in 2012 (McCarthy, 2012). The borrowing cost of emerging countries in international financial markets is generally represented by emerging market bond index (EMBI) spreads. The fluctuations in EMBI spreads have usually been associated with large business cycle swings in emerging countries by Neumeier and Perri (2005), major macroeconomic variables by Min (1998) and Beck (2001), some financial variables including exchange rates and domestic interest rates by Blanchard (2004) and Nickel, Rother and Rülke (2009), political risk factors by Baldacci, Gupta, and Mati (2008), global factors such as global financial conditions, US macroeconomic variables by Özatay, Özmen and Şahinbeyoğlu (2007) and Cheikh and Amadou (2013).

We will try to find the effects of some macroeconomic variables over sovereign bond spreads by including some selected macroeconomic control variables, specifically: net domestic credit, external balance on goods and services, total reserves, GDP and real GDP growth, total debt service, inflation, unemployment, foreign direct investment (FDI), revenue, current account balance, net flows on external debt, total debt service and expenses in this study.

The main purpose of this study is to identify macroeconomic variables that influence sovereign bond spreads. Regression model is used to examine the relationship between bond spreads and some selected macroeconomic control variables. The remainder of this paper is organized as follows. Section 1 outlines the previous literature, Section 2 discusses the data and econometric methodology. Section 3 presents the empirical findings.

1. LITERATURE REVIEW

There are many studies which have examined the relationship between sovereign bond spreads and various macroeconomic indicators and variables such as debt and fiscal variables, reserves, GDP growth, and interest rates in the literature. We will give major studies chronologically.

Edwards (1984) analyzed the determinants of the spread between the interest rate charged to a particular country and the London Interbank

Borrowing Rate by using data on 727 public and publicly guaranteed Eurodollar loans granted to 19 LDC's between 1976 and 1980. He found that the level of the spread will be positively related to the debt/GNP ratio and the debt service ratio. On the other hand, the spread will be negatively related to the international reserves to GNP ratio and the propensity to invest.

Eichengreen and Mody (1998) analyzed the issue decision of debtors and the pricing decision of investors by using data on nearly 1,000 developing-country bonds issued between 1991-1996. They found that higher credit quality translates into a higher probability of issue and a lower spread and also observed changes in fundamentals explain only a fraction of the spread compression in the period leading up to the recent crisis in emerging markets.

Min (1998) examined the factors that determined bond spreads in emerging markets in 1990s. He found that strong macroeconomic fundamentals in a country such as low domestic inflation rates, improved terms of trade and increased foreign assets were associated with lower yield spread and higher yield spreads are associated with weak liquidity variables in a country such as a high debt to GDP ratio, a low ratio of foreign reserves to GDP, a low export and a high import growth rate, a high debt service ratio.

Beck (2001) examined whether country fundamentals explain emerging market bond spreads by using a panel of 9 emerging market Eurobond spreads for the period from December 1998 to August 2010. He found that emerging market bond spreads after the Asian crisis could be completely explained by market forecasts about macroeconomic fundamentals and international interest rates.

Ferrucci (2003) investigated the empirical determinants of emerging market sovereign bond spreads by using a ragged-edge panel of JP Morgan EMBI and EMBI Global secondary market spreads and a set of common macro-prudential indicators. He found that a debtor country's fundamentals and external liquidity conditions are important determinants of market spreads.

Çulha, Özatay and Şahinbeyoğlu (2006) analyzed short-run and long-run determinants of the sovereign spreads in 21 emerging countries between 1998–2004 by using daily and monthly data and estimate individual country and panel regressions. They found that domestic (such as debt, net foreign assets, the fiscal balance, gross reserves all as ratios to the GDP of the country, debt service ratios, credit ratings, changes in terms of trade) and international factors (such as Fed target rate, credit rating) affect spreads, and the most important common determinant of the spreads is the risk appetite of foreign investors.

Özatat, Özmen and Şahinbeyoğlu (2007) examined the impact of global financial conditions, US macroeconomic news and domestic macroeconomic fundamentals on the evolution of EMBI spreads for a panel of 18 emerging market countries using daily data. They found that the long-run evolution of EMBI spreads depends on external factors such as changes in global liquidity conditions, risk appetite and crises contagion and domestic macroeconomic fundamentals proxied by sovereign country ratings are important in explaining the spreads and EMBI spreads respond substantially also to US macroeconomic news and changes in the Federal Reserve's target interest rates.

Baldacci, Gupta, and Mati (2008) investigated the determinants of sovereign bond spreads by using a panel of 30 emerging market economies between 1997 and 2007. They found that political risk factors play a significant role in raising sovereign spreads and fiscal variables are more important and have a larger impact on spreads.

Nickel, Rother and Rülke (2009) investigated the impact of fiscal variables on bond yield spreads relative to US Treasury bonds in the Czech Republic, Hungary, Poland, Russia and Turkey from May 1998 to December 2007. They found that the role of the individual explanatory variables, including the importance of fiscal variables, varies across countries.

Bellas, Papaioannou and Petrova (2010) analyzed the determinants of emerging market sovereign bond spreads by examining the short and long-run effects of macroeconomic and financial market factors on these spreads with the data set which covers 14 countries between the first quarter of 1997 and the second quarter of 2009. They found that fundamentals are significant determinants of emerging market sovereign bond spreads in the long run and financial volatility is a more important determinant of spreads than fundamentals indicators in the short run.

Siklos (2011) examines the determinants of emerging markets bond yield spreads by using domestic, external and global factors with 22 emerging markets in the period 1998-2009. He found that only volatility and central bank transparency are common factors in all countries and there are idiosyncrasies depending on geographic location of emerging markets such as Latin and South America, Europe, Asia or Africa.

Comelli (2012) tried to estimate sovereign bond yield spreads for 28 emerging market economies using a set of country specific and global factors, over the period January 1998 – December 2011. He found that that the coefficient estimates and statistical significance of country specific and global explanatory variables on bond spreads may vary across time and regions.

Poghosyan (2012) examined the determinants of sovereign bond yields in 22 advanced economies between 1980-2010 by using panel

cointegration techniques. He found that government bond yields increase by about 2 basis points in response to a 1 percentage point increase in government debt-to-GDP ratio and by about 45 basis points in response to a 1 percentage point increase in potential growth rate in the long run and sovereign bond yields deviate from the level determined by the long-run fundamentals, but about half of the deviation adjusts in one year in the short-run. On the other hand Bengoechea (2012) examined the relationship between sovereign bond yields spreads and fundamental macroeconomic variables in the Eurozone. He found that there are no constant relationships between fundamental variables and sovereign bond yields spreads across quantiles.

Cheikh and Amadou (2013) examined the effects of U.S. interest rates on emerging markets bond spreads between 2000–2009. They found that there is a negative relationship between U.S. interest rates and emerging market bond spreads.

2. DATA AND METHODOLOGY

2.1. Data

EMBI spreads will be used as dependent variable and some selected macroeconomic variables will be used as explanatory variables in the study. EMBI spreads data are taken from Global Financial Stability Reports and selected macroeconomic variables are drawn from the World Bank database. The regression analysis is based on a sample of 25 emerging market countries including Argentina, Brazil, Bulgaria, Chile, China, Colombia, Dominican Republic, Ecuador, Egypt, El Salvador, Hungary, Lebanon, Malaysia, Mexico, Panama, Peru, Philippines, Poland, Russia, South Africa, Tunisia, Turkey, Ukraine, Uruguay and Venezuela for a period of 2000-2009. The variables used in the panel data regression model are presented in Table 1.

Table 1: Variables Used in the Regression Model

Variable	Description
EMBI spreads	EMBI is an emerging markets debt benchmark for measuring the total return performance of international government bonds issued by emerging market countries that are considered sovereign (issued in something other than local currency) and that meet specific liquidity and structural requirements. EMBI measures only Brady bonds.
FDI, net inflows (BoP, current US\$)	FDI is the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. This series shows net

	inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors. Data are in current U.S. dollars.
Total reserves (% of total external debt)	International reserves to total external debt stocks.
Net domestic credit (current LCU)	Net domestic credit is the sum of net claims on the central government and claims on other sectors of the domestic economy. Data are in current local currency.
Revenue, excluding grants (% of GDP)	Revenue is cash receipts from taxes, social contributions, and other revenues such as fines, fees, rent, and income from property or sales. Grants are also considered as revenue but are excluded here.
Expense (% of GDP)	Expense is cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends.
External balance on goods and services (% of GDP)	External balance on goods and services (formerly resource balance) equals exports of goods and services minus imports of goods and services (previously nonfactor services).
Inflation, GDP deflator (annual %)	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.
GDP growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.
Unemployment, total (% of total labor force)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment. Definitions of labor force and unemployment differ by country.
Current account	Current account balance is the sum of net exports of

balance (BoP, current US \$)	goods, services, net income, and net current transfers. Data are in current U.S. dollars.
Net flows on external debt, long-term (NFL, current US\$)	Net flows (or net lending or net disbursements) received by the borrower during the year are disbursements minus principal repayments. Long-term external debt is defined as debt that has an original or extended maturity of more than one year and that is owed to nonresidents by residents of an economy and repayable in foreign currency, goods, or services. Data are in current U.S. dollars.
Total debt service (% of exports of goods, services and income)	Total debt service is the sum of principal repayments and interest actually paid in foreign currency, goods, or services on long-term debt, interest paid on short-term debt, and repayments (repurchases and charges) to the IMF.
Total reserves (includes gold, current US\$)	Total reserves comprise holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities. The gold component of these reserves is valued at year-end (December 31) London prices. Data are in current U.S. dollars.
GDP (current US\$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

Note: Descriptions of variable are obtained from World Bank Database and J.P. Morgan Emerging Bond Index definition.

Global factors are significant drivers in the emerging market economies with respect to their borrowing costs. These factors consist of availability of international liquidity and international investors' risk appetite. The EMBI Global proposes a market-capitalization-weighted index for each country. This index has U.S. dollar denominated Brady bonds, Eurobonds, and traded loans issued by sovereigns (Jaramillo and Tejada,

2011).

EMBI+ tracks total returns for traded external debt instruments (external meaning foreign currency denominated fixed income) in the emerging markets. The regular EMBI index covers U.S. dollar-denominated Brady bonds, loans and Eurobonds. The EMBI+ expands upon J.P. Morgan's original Emerging Markets Bond Index (EMBI), which was introduced in 1992 and covered only Brady bonds (Financial Times Lexicon, 2013).

2.2. Econometric Methodology

This study uses panel data regression to test the model because several advantages could be attained from regression that runs independently cross sectional or time series. Gujarati (2002) stresses the advantages of using panel regression. The author proposes three kinds of advantages. First advantage is that it is more informative with variability, reduce collinearity among the variable and give more degree of freedoms to the data. Second advantage is that it could construct better detection and measurement of effects that simply could not be observed in pure cross-sectional or pure time series data. Third advantage is that panel series provide the data to be available into several thousand units and this would minimize the bias that might result if individuals or firms level data are divided into broad aggregates.

General econometrics modeling accepts that error is constant over all time periods and locations as homoscedasticity exists. Nonetheless, problems that lead to heteroscedasticity problems could arise since variance of the error term produced from regression tends not to be constant, which is caused by variations of sizes in the observation. Therefore, the estimates of the dependent variable become less predictable Ordinary Least Squares (OLS) estimation solves this problem as it adopts the minimizing sum of residual squares condition. The OLS provides all errors to acquire equal importance no matter how close or how wide the individual error spread is from the sample regression function (Gujarati, 2002).

Gujarati (2002) also discussed several estimation and inference issues. Data in the modes consist of cross-section and time dimensions and therefore problems that cause cross/sectional and time series data namely heteroscedasticity and autocorrelation, need to be addressed. There exist some more issues such as cross-correlation in individual units at the same point in time. So, several estimation techniques are applied to address one or more of these issues. The two most known ones are the fixed effects model (FEM) and random effects model (REM). In FEM, the intercept in the regression model is allowed to differ among individuals in recognition to the fact that each individual or cross-sectional unit may have some unique characteristics of its own. At the same time, REM assumed that the intercept of an individual unit is a random drawing from a much larger population with

a constant mean value. If the error component β and X 's regressors are assumed as uncorrected, REM may be more suitable in contract if β and X 's are correlated, FEM might be appropriate.

Hausman test can also be applied to differentiate between FEM and REM. The null hypothesis underlying the Hausman test is that the FEM and REM estimators do not vary significantly. The test statistics developed by Hausman has an asymptotic Chi-Square (X^2) distribution. If null hypothesis is rejected (at 1% to 5% significant levels only), the FEM may be more appropriate to be used when compared to the REM. However, if null hypothesis is failed to reject or is significant at only 10% the REM is more suitable to be used.

3. EMPIRICAL FINDINGS

The results of estimating the equation using OLS (ordinary least squares), fixed effects and random effects model and the Hausman specification test which compares fixed effect and random effect models are presented at the Table 2-5. If the null hypothesis that the individual effects are uncorrelated with the other regressors in the model is not rejected, a random effect model is better than its fixed counterpart.

Table 2: Results of OLS Estimation

Dependent Variable	Coefficient	t-value
Foreign direct investment	2.57e ^{-08*}	1.61
Total reserves (% of total external debt)	-9.072604***	-2.97
Net domestic credit	-3.54e ^{-12*}	-1.81
Revenue	-70.95862***	-2.93
Expense	42.46987*	1.70
External balance on goods and services	17.04834**	2.17
Inflation	23.72819***	2.66
GDPgrowth	-5.583183	-0.36
Unemployment	5.269535	0.39
Current account balance	3.97e ⁻¹⁰	0.07
Net flows on external debt	-4.21e ⁻⁰⁹	-0.43
Total debt service	0.7491882	0.13
Total reserves (includes gold, current US\$)	1.78e ⁻⁰⁹	0.76
GDP (current US\$)	-8.92e ^{-10*}	-1.76
Constant	1294.453	3.42
F(14, 135) = 3.79***		
R-squared = 0.2821		Adj R-squared =0.2077

Note: All estimations were carried out using Stata and ***, ** and * indicate significant level of 1%,5% and 10% respectively.

Table 3: Results of Fixed Effects Estimation

Dependent Variable	Coefficient	t-value
Foreign direct investment	1.84e ^{-08***}	2.99
Total reserves (% of total external debt)	-1.908445*	-1.05
Net domestic credit	-1.23e ⁻¹²	-0.58
Revenue	-2.794979	-0.18
Expense	-42.51125***	-2.92
External balance on goods and services	-24.09292***	-2.75
Inflation	11.90542***	2.60
GDP growth	-24.35004	-3.78
Unemployment	25.08797*	1.81
Current account balance	-1.42e ⁻⁰⁹	-0.48
Net flows on external debt	-8.46e ^{-09*}	-1.88
Total debt service	-3.364181	-0.97
Total reserves (includes gold, current US\$)	1.52e ⁻¹⁰	0.14
GDP (current US\$)	-5.09e ^{-10*}	-1.40
Constant	1419.737	3.57
R- squared within = 0.3785		R- squared between = 0.0309
R- squared overall = 0.0454		
F(21, 114) = 46.95***		

Note: All estimations were carried out using Stata and ***, ** and * indicate significant level of 1%,5% and 10% respectively.

Table 4: Results of Random Effects Estimation

Dependent Variable	Coefficient	z-value
Foreign direct investment	1.85e-08	3.00***
Total reserves (% of total external debt)	-2.353348	-1.32
Net domestic credit	-1.44e-12	-0.70
Revenue	-4.135137	-0.28
Expense	-39.27529	-2.73***
External balance on goods and services	-19.44577	-2.34**
Inflation	12.18153	2.68***
GDP Growth	-23.93109	-3.73***
Unemployment	23.00184	1.74*
Current account balance	-1.63e-09	-0.56
Net flows on external debt	-7.90e-09	-1.77*
Total debt service	-2.998261	-0.90
Total reserves (includes gold, current US\$)	2.32e-10	0.22
GDP (current US\$)	-5.12e-10	-1.49
Constant	1506.552	3.55***
R- squared within = 0.3762		
R- squared between = 0.0566		
R- squared overall = 0.0647		

Note: All estimations were carried out using Stata and ***, ** and * indicate significant level of 1%,5% and 10% respectively.

Table 5: Results of Hausman Test

Estimation technique	Fixed Effects Model (FEM)
Chi-square Statistic (χ^2)	65.17***
Prob. χ^2	0.000
No. of observation	150

Note: All estimations were carried out using Stata and ***, ** and * indicate significant level of 1%,5% and 10% respectively.

Hausman test was used in order to decide which estimation technique is more appropriate between FEM and REM. As the chi square is significant at 1% and 5%, the test suggests that the FEM is more appropriate rather than REM for the estimation technique. As the chi-square is significant at 1% and 5%, the test suggests that fixed effect model is more appropriate rather than random effect model for the estimation technique. So we consider OLS and fixed effect estimation here.

There is a positive relationship between FDI and EMBI spread in the both models. On the other hand there is a negative relationship between total reserves (% of total external debt) and EMBI spread. The results shows that the coefficients have a negative statistically significant at the 1% in first model and 10% level in second model. Therefore, the lower percentage of reserve in total external debt would be resulting higher spread.

The relationship between net domestic credit and dependent variable is mixed. The coefficient of net domestic credit is statistically negative and significant at 10% in OLS model and insignificant in fixed effect model. The negative results imply that net domestic credit tends to report a lower level of spread. The relationship between revenue and dependent variable is also mixed. The coefficient of revenue is statistically negative and significant at 1% in OLS model and insignificant in fixed effect model. The negative results imply that reserves tend to report a lower level of spread.

Concerning the impact of expense, the coefficient shows a positive and significant value in first model and a negative and significant value in second model. In the case of expense the results are mixed in models. The positive result implies that an increase (decrease) in these expenses enhances (reduce) the dependent variable.

The relationship between external balance and EMBI spread have mixed results in two models. The coefficient is statistically significant in two models and positive in OLS model and negative in fixed effect model. The coefficient of inflation is statistically significant and positive in both models. Concerning the impact of GDP, the coefficient shows a negative and significant value in two models implying that if GDP were to improve, spreads would fall. Referring to the relationship between unemployment and dependent variable, the result shows that it is positive in two models and insignificant in OLS model and significant in fixed effects model. On the

other hand, the coefficient for net flows on external debt is also negative in both models and insignificant in OLS model and significant in second model.

We can also find that the estimated coefficient for GDP growth is insignificant and negative in both models. The coefficient of current account balance is also insignificant, and therefore has no estimated impact on spreads. The coefficient of total debt service is insignificant, indicating that movements within the variable have no impact on spreads. The coefficient for total reserves (includes gold, current US\$) is positive and insignificant in both models. So we can conclude that there is no impact on spreads in the case of these four variables.

Table 6: Results of Random Effects Estimation

	FDI	Total reserves (% of tot. ext. debt)	Net domestic credit	Revenue	Expense	External balance	Inflation	GDP growth	Unemployment	Current account balance	Net flows on external debt	Total debt service	Total reserves	GDP
FDI	1.0000													
Total reserves (% of tot. ext. debt)	0.5198	1.0000												
Net domestic credit	0.0623	0.0120	1.0000											
Revenue	0.0160	-0.1228	-0.2244	1.0000										
Expense	-0.0971	-0.1947	-0.1304	0.8463	1.0000									
External balance	0.1407	0.3390	-0.0563	-0.0420	-0.2134	1.0000								
Inflation	0.0654	-0.0905	-0.1207	0.2119	0.1773	0.2893	1.0000							
GDP growth	0.1237	0.2431	0.0154	0.0031	-0.1787	0.0174	-0.0639	1.0000						
Unemployment	-0.2951	-0.4262	-0.0278	0.1964	0.3241	-0.1021	0.1175	-0.1404	1.0000					
Current account balance	0.4576	0.5227	-0.0469	-0.0123	-0.2425	0.4712	0.1819	0.1495	-0.2887	1.0000				
Net flows on external debt	0.5684	0.0940	-0.0126	0.2899	0.0932	0.0163	0.1893	0.1338	-0.1562	0.1572	1.0000			
Total debt service	0.0022	-0.3997	0.1960	-0.1891	-0.0086	-0.1706	-0.0224	-0.2630	-0.0670	-0.2596	-0.0478	1.0000		
Total reserves	0.8781	0.6843	-0.0087	-0.0633	-0.1719	0.2470	0.0355	0.0968	-0.2965	0.6785	0.4193	-0.1517	1.0000	
GDP	0.9291	0.5122	0.0044	-0.0618	-0.1201	0.1966	0.0516	0.0703	-0.2291	0.4402	0.4875	0.0453	0.8827	1.0000

The matrix on Table 6 shows that in general the correlation between the explanatory variables is not strong suggesting that multicollinearity problems are not severe. Gujarati (2002) asserted that in detecting the multicollinearity problem in regression model, the problem could be considered as serious if the pair-wise or zero-order correlation coefficient between two regression is in excess of 0.8. Here all the values (except three cases) are not in excess of 0.8, so multicollinearity problem could not be considered as serious.

CONCLUSION

We examine the effects of major macroeconomic indicators on EMBI spreads by using a panel of 25 emerging market countries' bond index spreads and a set macroeconomic indicators between 2000 and 2009 and we find that there is a positive relationship between EMBI spreads and inflation, FDI and a negative relationship between EMBI spreads and GDP, reserve in total external debt. There are no statistically significant relationships between emerging markets bond spreads and GDP growth, current account balance, total debt service and total reserves (includes gold, current US\$) in OLS and FEM models. So these four variables have no effects on emerging bond spreads. The rest of our variables have a mixed relationship with emerging markets bond spreads:

- There is a positive relationship between external balance and bond spreads in OLS and a negative relationship in FEM model.
- There is a positive relationship between expense and bond spreads in OLS and a negative relationship in FEM model.
- There is a positive relationship between unemployment and bond spreads but only statistically significant in FEM model.
- There is a negative relationship between net flows on external debt and bond spreads but only statistically significant in FEM model.
- There is a negative relationship between net domestic credit and bond spreads but only statistically significant in OLS model.
- There is a negative relationship between revenue and bond spreads but only statistically significant in OLS model.

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