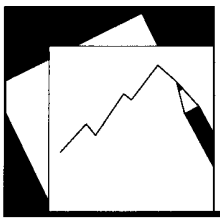


WP/08/259

IMF Working Paper

Is it (Still) Mostly Fiscal? Determinants of Sovereign Spreads in Emerging Markets

Emanuele Baldacci, Sanjeev Gupta and Amine Mati

INTERNATIONAL MONETARY FUND

 WP/08/259

IMF Working Paper

Fiscal Affairs Department

Is it (Still) Mostly Fiscal? Determinants of Sovereign Spreads in Emerging Markets

Prepared by Emanuele Baldacci, Sanjeev Gupta and Amine Mati [1]

November 2008

Abstract

Using a panel of 30 emerging market economies from 1997 to 2007, this paper investigates the determinants of country risk premiums as measured by sovereign bond spreads. Unlike previous studies, the results indicate that both fiscal and political factors matter for credit risk in emerging markets. Lower levels of political risk are associated with tighter spreads, while efforts at fiscal consolidation narrow credit spreads, especially in countries that experienced prior defaults. The composition of fiscal policy matters: spending on public investment contributes to lower spreads as long as the fiscal position remains sustainable and the fiscal deficit does not worsen.

JEL Classification Numbers: C41, H30

Keywords: Sovereign spreads, political risk, emerging markets, fiscal consolidation

Author's E-Mail Address: e.baldacci@sace.it; sgupta@imf.org; amati@imf.org

[1] Emanuele Baldacci (chief economist at SACE, the Italian export credit company) was a visiting scholar in the Fiscal Affairs Department during August 2008. We would like to thank Julio Escolano, Manmohan Kumar, Ashoka Mody and Jari Stehn for helpful comments and suggestions on an earlier version, and Annette Kyobe and Sukhmani Bedi for research assistance. The usual disclaimer applies.

Contents Page

I. INTRODUCTION

Notwithstanding recent developments, financial markets' perception of credit risks in emerging economies has sharply improved over the last half decade. The spread of the composite Emerging Market Bond Index Global (EMBIG) calculated by JP Morgan[2] tightened by more than 500 basis points between mid-2002 and August 2007 (Baldacci, 2007). The downward trend was only partially reversed since the onset of the subprime-induced financial crisis (IMF, 2008). This suggests that investors required a lower premium to protect themselves against country-specific and asset-class-wide risks when lending to sovereign (and to a large extent also private) counterparts in these countries. Also the cost of buying protection against defaults of sovereign emerging market debt instruments, as measured by the spreads of Credit Default Swap (CDS) derivative instruments, fell drastically over the last five years despite the recent cyclical uptick.[3]

The literature has attributed the tightening of emerging market spreads to three factors: (i) sound macroeconomic policies that brought inflation under control (including through more independent monetary authorities), reduced output volatility, and significant reductions in public and external debt (Ciarlone, Piselli, and Trebeschi, 2008); (ii) higher commodity prices and favorable liquidity conditions that lowered risk and resulted in large capital flows to these countries (Hartelius, Kashiwase, and Kodres, 2008); and (iii) development of capital markets, which helped diversify production chain risks (Baldwin, 2006).

However, the analysis of the impact of political and fiscal factors and their interaction with global financial conditions has been relatively limited. This paper attempts to shed some light on this topic by constructing a comprehensive measure of political risk and introducing fiscal variables into a model of spreads for a sample of 30 emerging market economies.

Our results show that lower levels of political risk are associated with reduced spreads. This is consistent with recent progress made by many emerging market economies in reducing political instability, consolidating nascent democratic institutions, and reducing the government interference in the economy (Eichengreen and Leblang, 2006). The results indicate that that fiscal consolidation lowers credit spreads considerably, especially in countries that experienced a prior default. The composition of fiscal policy matters: high public investment contributes to lower spreads as long as it does not increase the fiscal deficit.. It appears that financial markets view such investments in infrastructure-constrained economies positively.

---

[2] The EMBIG index was introduced in January 1998 and includes countries rated BBB+ or lower by Standard & Poor's. The countries included are both middle-income and low-income economies that have undergone at least an episode of debt restructuring. The EMBIG has rapidly become a global market benchmark for emerging economies' credit risk assessment.

[3] CDS spreads can be viewed as the marginal cost of debt , while the EMBIG sub-index for a country is more representative of the average cost of traded debt. According to Singh and Andritzky (2005), CDS spreads are a leading indicator of borrowing costs during crisis periods, while the average cost is a better proxy for the sovereign risk in the absence of default.

The rest of the paper is organized as follows: Section II provides an overview of the literature on the determinants of sovereign bond spreads in emerging market countries. It shows that the link between political risk, fiscal factors, and sovereign spreads has been neglected so far. Section III discusses a framework for modeling debt default decisions taking into account the role of political and fiscal risks. The model is used to derive an empirical specification that is presented in sections IV. Section V reports the empirical findings and discusses the policy implications. Section VI concludes.

II. LITERATURE REVIEW

Many authors have emphasized the role of country-specific economic factors in explaining variation in credit risk spreads. In his groundbreaking paper, Edwards (1984) shows that external debt and debt service are the key determinants, followed by current account balance, international reserves, and the country's investment ratio.[4] Min (1998) finds that a larger set of macroeconomic variables matter, including domestic inflation rate, net foreign assets, terms of trade index, and real exchange rate.[5] Rowland and Torres (2004) show that creditworthiness is also key for emerging market sovereign debt cost,[6] while credit ratings indicators are, in turn, found to be influenced by macroeconomic fundamentals.[7]

Global factors have increasingly been highlighted as important determinants of country risk spreads. Uribe and Zue (2006), Kamin and von Kleinst (1999) and McGuire and Schrijvers (2003) find that global factors transmit external shocks to individual country risk through the rating system. Using high frequency data, Hartelius, Kashiwase, and Kodres (2008) show that external global factors (including interest rate expectations and volatility) account for over half of spread dynamics. Gonzales-Rosada and Levy-Yeyati (2006) highlight the importance of contagion from systemic events, such as the 1998 Russia crisis, for credit spreads. Ciarlone, Piselli, and Trebeschi (2007), however, find that specific factors linked to improved fundamentals of a given country are more important than common global factors.[8]

---

[4] The loan value and its duration, however, are not reported to influence country spreads significantly.

[5] These authors also find that private sector bond issuers pay a higher yield than sovereign counterparts (on average almost 30 percent higher). Cavallo and Valenzuela (2007) also show a significant link between sovereign and private bond spreads using firm-level quarterly data. They report that sovereign risk pass-through to private spreads is less than proportional.

[6] Eichengreen and Mody (1998) also find that market sentiment plays a key role in determining country risk premiums on launch spreads once selection bias is removed from estimation.

[7] The link between credit rating and macroeconomic variables is found to be significant in many studies. Cantor and Packard (1996) show that ratings account for over 90 percent of spread variation and that macroeconomic policy tends to be linked to better ratings as the authorities change their stance to earn better assessments from the financial markets. Afonso (2002) and Afonso, Gomes, and Rother (2007) show that economic growth and inflation are important variables underlying country ratings.

[8] In a recent paper by Gonzales-Hermosillo (2008), common global factors tend to become more important for credit spread variation in periods of financial distress. Dailami, Masson, and Padou (2005) also point to nonlinear effects of common factors on spreads depending on countries' vulnerability conditions.

Another strand of the literature has tried to derive the factors behind dynamics of country risk premiums from structural models. Eaton and Gersovitz (1981) lay out a theoretical framework for debt default by using the relative opportunity cost of debt repudiation and its determinants as the key dimension. Kulatilaka and Marcus (1987) show that a large stock of outstanding debt would lead to risk of being shut down from the capital markets, thus resulting in increased welfare loss.[9] Westphalen (2001) explains changes in credit spreads of sovereign bonds using the variables identified by these structural models (e.g., market liquidity, funding costs, interest rate curve slope), but show that these account for only one fifth of total variation. His results capture, however, the importance of the social costs associated with debt repudiation (e.g., in terms of exclusion from international financial markets).[10]

Only a limited number of papers finds a role of fiscal stability in determining emerging market bond spreads (for example, Faria et al 2006). Fiscal variables are not found to significantly affect spread movements in most empirical studies once other macroeconomic variables are controlled for (Edwards, 1994; Min, 1998). In some studies, fiscal policy variables are assumed to be fully captured by credit risk ratings (Cantor and Packard, 1996) or accounted by the country-specific fixed effects in panel regressions. Exceptions include: (i) Hallerberg and Wolff (2008) who show that fiscal policy remains a significant determinant of risk premia in EMU countries, with fiscal deficits mattering less in countries with better institutions; and (ii) Akitoby and Stratum (2006) who show that higher public debt levels result in wider spreads as markets perceive the potential unsustainable pace of fiscal policy. Akitoby and Stratum (2006) also show that the composition of the budget matters as fiscal consolidations achieved through persistent expenditure compression (in particular, current expenditure reduction relative to capital outlays) tend to be associated with lower spreads and better ratings than deficit reductions achieved through tax increases.

Political risks (e.g., risks of political violence, transfer, and expropriation) have also received a limited treatment in the literature. Some authors (for example, Ferrucci, 2003) cite political risk factors among the variables that likely explain the large residuals in bond spread regressions but they do not provide an empirical assessment of these residuals. Faria et al. (2006) highlight the importance of institutional factors in determining access to capital markets during previous periods of financial globalization and Schularick (2006) points to the importance of political economy variables to account for historical spread compression during the first wave of financial globalization. However, none of these studies specifically assess the impact of political risks on spreads, mainly because of information constraints.

[9] Rocha and Garcia (2006) propose a structural model to estimate the term structure of sovereign spread. They calibrate the model for a typical emerging market economy and estimate the implied default probability for a sample of countries. In their model, real exchange rate movements are a trigger for defaults and determine the link between exchange rate depreciation and country risk. In particular, a currency depreciation can exacerbate fiscal disequilibria when the economy has an open capital account, but a relatively limited external revenue income base.

[10] Gibson and Sudersen (1999) also show the role that exports can have as collateral in a theoretical model of debt.

The papers that investigate the link between country risk spreads and political determinants are more frequent. Pantzalis et al. (2001) find a positive association between pre-election uncertainty and widening spreads and Stein and Streb (2004) show that country risk is influenced by electoral results. Obstfeld (1995) and Rodrick (1991) point out the role of political and institutional factors in financial crisis episodes. Moser (2007) looks more specifically at cabinet reshuffles and their impact on sovereign bond spreads in Latin America. He finds that spreads tend to increase significantly in the 40 days leading up to a change in the minister of finance, before flattening out in the following period, albeit at a higher level than before the "shock". These papers are, however, silent on the medium-term implications of specific political risks (e.g., political violence and expropriation) for emerging market credit price.

III. SOVEREIGN SPREADS: A SIMPLE THEORETICAL FRAMEWORK

To illustrate that political risk and fiscal factors play a role in the determination of sovereign bond spreads, we draw on the country risk framework. This framework determines how borrowers and lenders make their decisions regarding a loan and its eventual repayment (i.e., the decision whether or not to remain current on debt service payments), with the actual default event depending on this decision.[11]

Turning to the borrower's behavior and considering that the borrower is a government, we assume that the willingness to repay its debt depends on: (i) the borrower's assessment of the lender's ability to punish it in case of a default; and (ii) future access to international capital markets (Eaton, Gersovitz, and Stiglitz, 1986). In the decision, the borrower will have to consider: (i) the lender's sanction of a default and that as a consequence other financial market participants will be unwilling to lend to it in the future; and (ii) the benefits (for example in terms of cash flow) of not servicing the debt. A decision will be made in favor of the default event, in general terms, when the opportunity cost of non-payment is less than the marginal cost of doing so.

To show how the decision-making framework works in the case of a sovereign borrower, we assume a simple model where the government borrows a quantity D that has to be repaid.[12] The government wants to maximize its welfare function U, which depends positively on per capita output c and the loan that can be obtained in the capital market (as the loan can be used to smooth intertemporal consumption). Its welfare function is negatively affected by the defaulting cost C. The model can thus be written as:

[11] The considerations made in this section are general and can be applied both to a sovereign bond issue as well as a banking sector loan to a government entity. The comparative empirical literature shows that similar factors affect the level of spread charged on either debt instruments (Edwards, 1984).

[12] Generalizing this simple framework to a multi-period model would complicate the formal treatment but will not change the main conclusion of the model.

$$U = U(c, D, C) \qquad (1)$$

with $\partial U / \partial c > 0$, $\partial U / \partial C < 0$, and $\partial U / \partial D > 0$.

The government is subject to a non-explosive debt dynamics constraint, which is described by:

$$s \geq (r - g)d \qquad (2)$$

where *s* is the primary government budget surplus (government revenue minus non-interest expenditure), revenue is a constant share of output *c*, *r* is the prevailing interest rate, *g* is the economy growth rate, and *d* is the ratio of government debt to the economy's output.

In this economy, the government can decide to default with a probability $p>0$ when the expected cost *E(C)* of doing so is below the value of debt (Edwards, 1984):

$$p = 1 - \frac{E(C)}{D} \qquad (3)$$

where *E(C)* expresses the cost of debt repudiation, with $\partial p / \partial E(C) < 0$, $\partial p / \partial D > 0$, and $0 \leq p \leq 1$.

We can now define the debt repudiation cost as a function of a loss variable *L*:

$$E(C)=f(L) \qquad (4)$$

with $f'>0$ *and* $f''<0$. Imposing that:

$$L=c+R \qquad (5)$$

with *R* a measure of international capital markets reputation which can be (partially) lost by the sovereign when defaulting on debt payments, and increases with the improvements in the economy's fundamentals. The reputation capital can be formulated as follows:

$$R = \phi(c, \rho) \qquad (6)$$

and ρ is a measure of political risk, such that with $\partial R / \partial c > 0$ and $\partial R / \partial \rho < 0$. Higher political risks "consume" the international reputation and therefore reduce the associated capital.

By combining the above equations, we can rewrite the probability of default as a function of the public debt level (e.g., fiscal risk), per capita output, and political risk:

$$p = 1 - \frac{f(c+R)}{D} \qquad (7)$$

with $\partial p / \partial c < 0$, $\partial p / \partial D > 0$, and $\partial p / \partial \rho > 0$.

Therefore the probability of default (and consequently the sovereign credit risk spread) is a positive function of political risk and public debt levels and a negative function of macroeconomic health. We use the above results in the next section to derive an empirical specification of the determinants of sovereign bond spreads.

IV. EMPIRICAL MODEL SPECIFICATION

We use a panel data framework to control for heterogeneity across countries. Our baseline specification can be written as:

$$Y_{it} = \alpha_i + \beta X_{it} + u_{it}, \text{ i=1,….N; t=1,…T} \qquad (8)$$

Where Y_{it} is the logarithm of foreign currency bond spreads for each country (and each year) in the sample. X_{it} are the explanatory variables, U_{it} is the error term and the β_s represent estimated coefficients. As shown in the literature, there are a large number of variables that can determine credit risk. Given that our main objective is to focus on political risks and fiscal factors, we only include the main indicators of solvency and liquidity and global factors as part of our control variables.

The basic model is estimated using fixed and random effects estimators to control for both country-specific and time-specific heterogeneity factors. A Wu-Hausman test is used to test which of these models should be used. The potential endogeneity and omitted variable bias of the explanatory variables is dealt with by using an instrumental variable estimator (we used both 2-stage least squares and Generalized Method of Moments).

In general, we included the following as Xit explanatory variables:

- *Solvency and liquidity*: these variables account for the macroeconomic fundamentals that have been found to have a significant impact on bond spreads (Min, 1998) and include: (i) external reserves as a percentage of GDP, which is a stock measure of a country's capacity to service its external debt. It is negatively related to the spread as higher reserves signals a stronger ability to service debt or absorb a negative shock; (ii) inflation rate, which is a key indicator of macro-economic stability. High inflation can occur from monetization of the fiscal deficit and signal the need for higher interest rate, thus increase the cost of capital. For this reason, higher inflation will tend to increase sovereign risk; (iii) current account balance, which is an indicator of economic performance and provides information on the ability to repay foreign debt. A higher

current account surplus leads to lower spreads; (iv) economic growth which is expected to have a negative sign; higher growth increases the reserve cushion countries can use to address liquidity problems.

- *Global financial conditions*: these variables account for the common factors influencing all emerging markets at the same time (McGuire and Schrijvers, 2003) and comprise: (i) US policy interest rate (Arora and Cerisola, 2001), and (ii) VIX stockmarket volatility index (Ozatay, Ozmen, and Sahinbeyoglu, 2007). These variables are expected to have a positive sign, meaning that more adverse international liquidity conditions and risk perception tend to widen credit spreads in emerging markets.

- *Fiscal vulnerability*: fiscal weakness is captured by the overall fiscal balance as a share to GDP and the public investment ratio to GDP. Both variables are expected to contribute negatively to the credit risk spread, as a sounder fiscal stance and an improved composition of public spending lower default probability (Akitoby and Stratman, 2006).

- *Political risk*: political factors are captured by a new index of aggregate political risk constructed by employing principal components analysis to extract an optimally weighted linear combination of various dimensions included in the World Bank governance index and the Heritage Foundation economic freedom index.[13] This index (PRI) is centered around zero and has positive values when political risk is low. For robustness tests, we also use the ICRG political risk variable and build another one following the methodology of Ferrari and Rolfini (2008). This indicator (FRPRI) has a zero mean and ranges between -2.5 (highest risk) and +2.5 (lowest risk). Using their approach, we are also able to construct sub-indexes of the three main dimensions of this risk capturing political violence (FRPOL), transfer (FRTRA), and (creeping) expropriation risks (FREXP).The political risk variables are expected to have a negative sign as higher political instability undermines the reputation capital and increases the default probability.

[13] This method weighs the original risk variables according to the factor loadings of the first principal component of the data matrix that accounts for most of the original data dispersion. Optimal weights are derived from the procedure to maximize the data variance explained by this linear combination of the original data. Weights are a function of the correlation between the original data and the latent variable associated with the principal component. Varimax rotation of the solution has been used to maximize the explanatory power of original variables and facilitate the result interpretation. The index is strongly correlated as a result with the political violence, expropriation and transfer risk variables that are used in the political risk index literature (Ferrari and Rolfini, 2008). Compared to the latter, though, our index has the desirable property of choosing weighting factors endogenously in a way that the index accounts for most of the data dispersion.

V. DATA AND ESTIMATION RESULTS

Data

For the empirical analysis, spreads data on 30 emerging market countries[14] are drawn from the EMBIG index for the 1997-2007 period. The annual spread represents period averages data for the whole year. Unless otherwise specified, the macroeconomic variables are drawn from the WEO database, financial variables are taken from Bloomberg, and fiscal variables are from the GFS database. The political risk variables are taken from the World Bank governance database and the Heritage Foundation.

While general political risk indicators exhibit a long-term declining trend for both advanced and emerging markets, our index of political risk captures the recent pick up in risks in the emerging economies of the sample[15]. In particular, political violence and expropriation risk have risen in some countries in the recent decade as a result of growing government control over natural resources. By contrast, transfer risks have not increased in the sample as more flexible exchange rate arrangements have become more widespread, including in the emerging market world. Along with an increase in selected political risks, we also notice higher variability in political risk measures across countries in the sample as differences between countries have widened by unequal progress toward strengthening of institutions.

Table 1 shows the data statistics. Table 2 reports correlations among these variables. Spreads are significantly correlated to political risk indicators (see also Charts 1 and 2). These correlations account for between 10 percent and 25 percent of credit risk premiums variation. The correlation is strong and significant for fiscal variables as public debt and public investment to GDP account for about 10 percent of the spread variation. The fiscal balance and the revenue-to-GDP variables have lower correlation coefficients reflecting nonlinear relations with credit spreads in the sample. The correlation between fiscal and political risk variables is stronger for public debt and public investment indicators: lower debt and higher investment spending are associated with lower spreads.

[14] The countries included in the sample are: Argentina, Bolivia, Brazil, Chile, China, Colombia, Chech Republic, Ecuador, Egypt, Hungary, India, Indonesia, Jordan, Lebanon, Malaysia, Mexico, Nigeria, Pakistan, Peru, Philippines, Poland, Russia, South Africa, South Korea, Thailand, Turkey, Ukraine, Uruguay, Venezuela, and Vietnam.

[15] A 20 percent increase in the index is equivalent to moving from the bottom quintile to the medium-risk range of the country distribution (a change typically associated with strong reform implementation and institutional progress taking many years).

Table 1. Descriptive Statistics

Variable		Mean	Standard Deviation	Min	Max
lspread	log of average annual bond spread	5.67	0.99	2.63	8.67
f2	principal component	0.20	2.48	-4.39	6.49
fisbal	Overall fiscal balance	-0.03	0.04	-0.24	0.08
nfig_gdp	Public investment to GDP	5.73	3.93	0.92	21.18
linfl	log of inflation	-2.74	1.10	-6.86	1.32
fedfunds	US policy interest rate (in percent)	4.18	1.70	1.12	6.23
resgdp	Reserves to GDP ratio	7.20	69.29	0.00	1160.00
cabgdp	Current account to GDP ratio	-0.44	43.43	-491.48	648.99
tot	Terms of trade	103.34	12.22	45.07	199.30

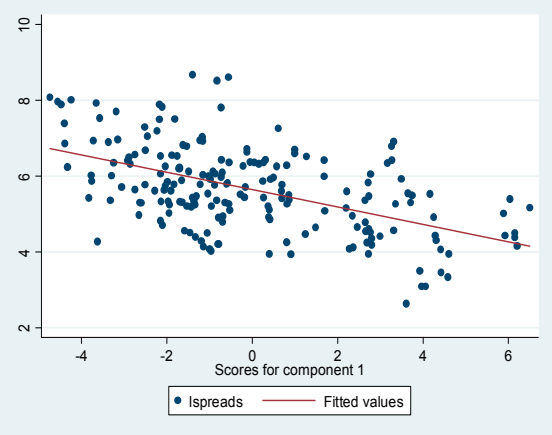
Source: IMF, Bloomberg, WDI, Heritage foundation.

Table 2. Correlation Between (log) Spreads, Political Risk and Fiscal Variables
(p-values in parenthesis)

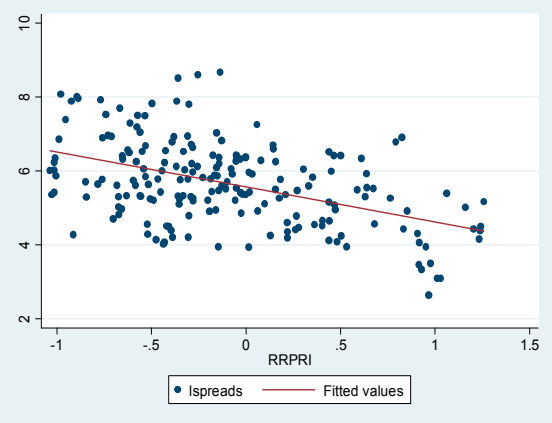
Spreads	1									
PRI	-0.52 (0.000)	1								
FRPRI	-0.47 (0.000)	0.97 (0.000)	1							
FRPOL	-0.48 (0.000)	0.93 (0.000)	0.92 (0.000)	1						
FRTRA	-0.27 (0.000)	0.67 (0.000)	0.8 (0.000)	0.55 (0.000)	1					
FREXP	-0.50 (0.000)	0.98 (0.000)	0.95 (0.000)	0.87 (0.000)	0.66 (0.000)	1				
Fiscal balance to GDP	-0.08 (0.169)	-0.06 (0.366)	-0.12 (0.045)	-0.03 (0.628)	-0.16 (0.001)	-0.11 (0.169)	1			
Public debt to GDP	0.25 (0.000)	-0.33 (0.000)	-0.26 (0.000)	-0.31 (0.000)	-0.08 (0.290)	-0.27 (0.000)	-0.61 (0.000)	1		
Public investment to GDP	-0.29 (0.000)	-0.16 (0.012)	-0.21 (0.021)	-0.15 (0.000)	-0.26 (0.000)	-0.17 (0.001)	0.07 (0.163)	-0.04 (0.538)	1	
Government revenue to GDP	-0.03 (0.648)	0.26 (0.000)	0.21 (0.002)	0.32 (0.000)	0.03 (0.648)	0.17 (0.012)	0.14 (0.012)	-0.19 (0.001)	-0.19 (0.000)	1

Chart 1. Emerging Market Risk (log) Spreads and Various Political Risk Indices

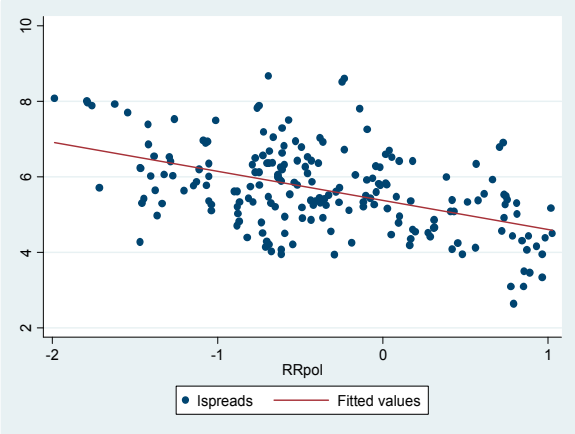
a) PRI



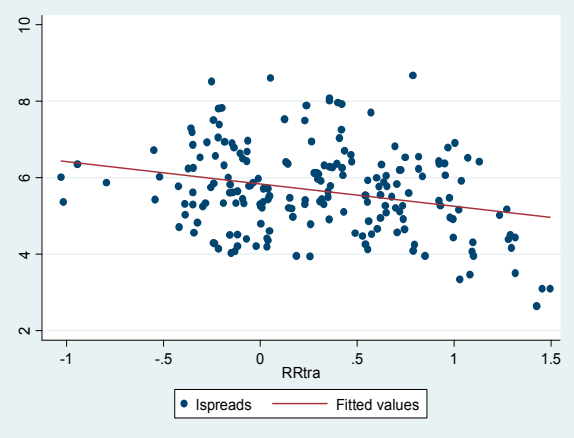
b) FRPRI



c) FRPOL



d) FRTRA



e) FREXP

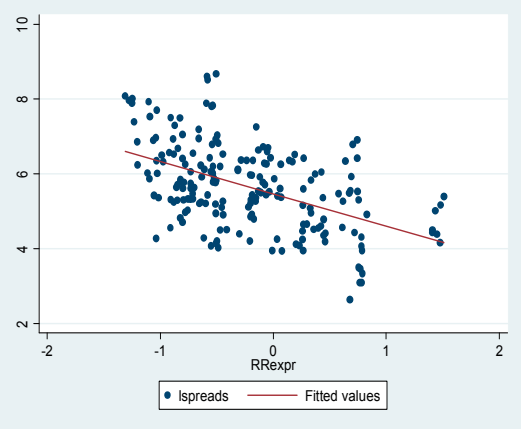
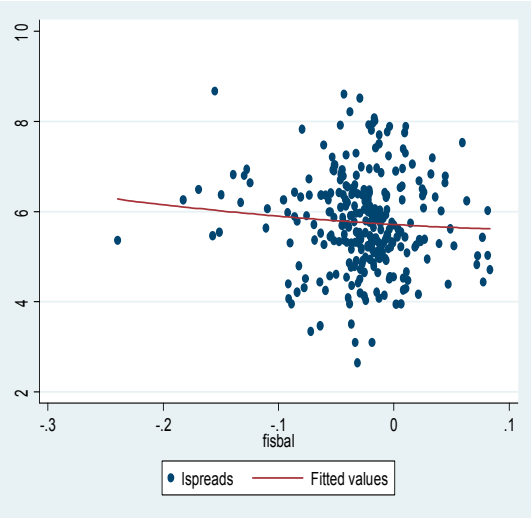
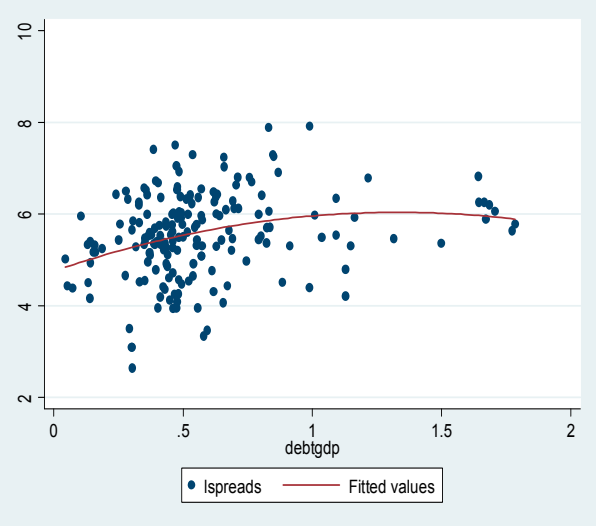


Chart 2. Emerging Market Risk (log) Spreads and Fiscal Variables (in percent of GDP)

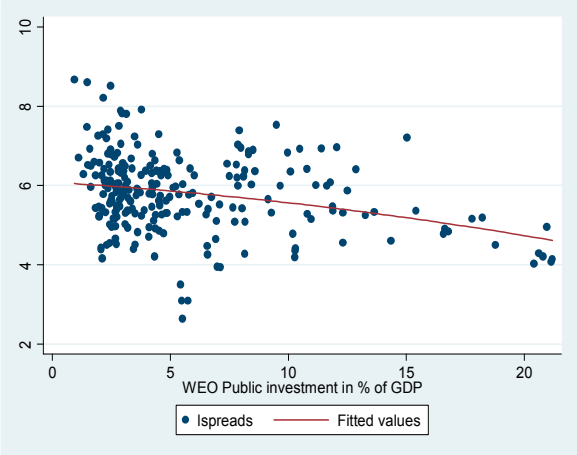
a) Overall balance



b) Public debt



c) Public investment



Econometric Results

Table 3 presents our baseline results where the random effects model is estimated.[16] The first column estimates the impact of political factors on spreads, the second column assesses the impact of fiscal variables (overall fiscal balance and public investment), the third column investigates the relative role of political and fiscal variables while the fourth column reports on the full-fledged model where the importance of the fiscal and political factors is assessed while controlling for both macroeconomic and global financial conditions.

[16] We conducted a Hausman test, which rejected the fixed effects model at 1 percent significance level.

Table 3. Random Effects Estimates: Whole Sample
(Dependent Variable: Annual Mean Spread)

Variable	Spread (1)	Spread (2)	Spread (3)	Spread (4)	Spread (5)	Spread (6)
PRI	-0.168 (0.050)***		-0.179 (0.052)***	-0.1575 (0.070)**	-0.161 (0.06)***	-0.159 (0.013)***
Slope dummy: PRI*High Volatility	…	…	…	…	0.024 (0.05)	…
Slope Dummy: PRI * Default						-0.003 (0.095)
Fiscal Balance		-7.76 (1.512)***	-7.83 (1.970)***	-4.297 (2.106)**	-4.708 (2.05)**	-5.59 (1.836)***
Slope dummy: Fiscal Balance * High Volatility					-4.149 (2.04)**	…
Slope Dummy: Fiscal Balance * Default						-5.08 (2.849)***
Public Investment		-0.054 (0.026)**	-0.078 (0.025)***	-0.072 (0.032)**	-0.065 (0.02)**	-0.06 (0.026)**
FED Funds Rate				-0.007 (0.030)	-0.007 (0.031)	-0.001 (0.032)
Log inflation				0.178 (0.082)**	0.177 (0.083)**	0.169 (0.085)**
Reserves				-1.664 (0.875)**	-2.15 (0.795)***	-2.34 (0.785)***
Current account balance				-1.28 (0.675)**	-1.66 (0.61)***	-1.81 (0.606)***
TOT				-0.011 0.003***	-0.010 0.005**	-0.011 0.004**
N	188	245	173	128	128	128
Overall R-Square	0.21	0.17	0.27	0.46	0.46	0.46
Wald Chi-Square	11.21	26.14	29.66	145.82	177.56	232.74

Robust standard errors are in parenthesis
* indicates statistical significance at the 10 percent level, ** at the 5 percent level, and *** at the 1 percent level

Results indicate that point estimates for fiscal and political variables have the expected effect on spreads and remain significant under all specifications. Elasticities derived from the log specification shown in column 3 imply that a 10 percent increase in our political risk index leads to a 10 basis point increase in spreads. The impact is even larger for fiscal variables as a 10 percent increase in the fiscal surplus reduces spreads by 2 percent, implying that one percent of GDP improvement in the primary balance can help decrease spreads by about 30-40 basis points. Interestingly, the coefficient on public investment is also found to be significant

implying that markets reward higher public investment spending as they see it beneficial to growth,[17] with perhaps less importance given to its quality.

However, our estimation results show that the impact of the fiscal balance on spreads is several orders of magnitude larger than the coefficient that measures the impact of public investment on spreads. Since both variables are measured in our regressions in the same units (percent of GDP), this result implies that a deficit financed expansion of public investment would not have a positive impact on spreads. In sum, our results show that increasing capital spending is in general good policy for reducing spreads as long as it does not lead to a widening of the fiscal deficit. In the latter case, the negative impact of a larger deficit far outweighs any potential benefit from lower public investment.

The results on political and fiscal variables remain significant once we account for the solvency and liquidity variables or global factors. Indeed, column 4 of table 3 shows that inflation, reserves, current account, and TOT variables have the expected effect on spreads with the point estimates being statistically significant. A rise in US interest rate, representing a global factor, does not affect spreads significantly, perhaps because the inflation variable already explains some of this variation.[18] The full specification model explains 46 percent of the variation in the spreads.

Columns 5 and 6 of table 3 show the importance of the political and fiscal variables in periods of high market volatility (as is the case currently) and in countries with prior default history by introducing two slope dummies: one for periods of high volatility (i.e., dummy equals 1 if VIX is greater than 25) and the other for countries that defaulted previously (i.e., dummy equals 1 in the year of default and all subsequent years). Results imply that the political factors do not matter more during periods of financial stress or in countries that previously had lax fiscal discipline as the dummy interacted with the political factors remains insignificant. On the other hand, the results show that countries that previously experienced default or that experience high volatility need to redouble their efforts to show fiscal discipline. For example, in the case of countries that had a prior default, a 1 percent of GDP increase in the fiscal deficit would increase spreads by about 80 basis points (double the amount shown for countries with no default). This also confirms findings in the literature showing that default history has reputational consequences and matters in explaining spreads (Akitoby and Stratman (2006); Mauro, Sussman and Yafeh (2006)). It also implies that markets are more likely to give more leeway for discretionary fiscal policy to countries that have a good track record.

[17] We also tried the specification by including current revenue and current spending and we found both insignificant, implying that cuts in current spending or higher revenues have no impact on spreads. It is our premise that inclusion of the primary surplus already takes into account for changes in these variables.

[18] Eichengreen and Mody (1998) also finds this ambiguity and argue that this is due to selection bias. Min (1998) also note that bond issues are different from syndicated loans and does not tie interest payments to a short-run dollar rate.

VI. Robustness Analysis

We checked the robustness of our results by employing alternative specifications, and concluded that our findings are robust to different specifications (Table 4). We use two different techniques: the first fits panel-data linear models by using feasible generalized least squares (FGLS), which allows for the presence of heteroskedasticity across panels to control for greater variation across countries (which could be different according to size, income, and macroeconomic characteristics, etc.). The second controls for endogeneity by instrumenting for the overall fiscal balance with the debt-to-GDP variable. This is done by first using 2-stage least squares to instrument for the variable and also through GMM in order to control for overidentification. While we lose some observations as we have less data points for the debt variable, our key results remain the same as political and fiscal variables are significantly and robustly correlated to spreads.

In another check for robustness, we used alternative measures of solvency, liquidity and fiscal variables to see whether these affect our results. We found that higher real growth leads to lower spreads. We find that high debt-to-gdp ratio leads to an increase in spreads, implying again that the fiscal position matters as highly indebted countries are penalized by international capital markets.

The last robustness check involves assessing whether a particular kind of political risk is more likely to affect spreads. Looking at the three subcomponents of FRPRI index used by Ferrari and Rolfini (2008), it emerges that bond spreads appear more closely related to expropriation risk than transfer or political violence. Such a result is verified if we replace our principal component based indicator (PRI) with each of the sub-components of the index designed by Ferrari and Rolfini (Table 5). Indeed, creeping expropriation seems to be the prevailing threat to financial markets and account for the largest share of political risks for which investors are seeking protection in the insurance industry (Ferrari and Rolfini, 2008). While transfer risks are a declining threat as exchange rate and financial liberalization progress across the world, they can be an issue in certain countries (e.g., where exchange rates are pegged *de facto*) and where capital account controls persist. We also find that the ICRG political risk variable is very significant as higher government stability, better socioeconomic conditions, and enhanced democratic accountability— key components of the index—are helpful in lowering spreads.

Table 4. Alternative Estimations: Whole Sample
(Dependent Variable: Annual Mean Spread)

Variable	GLS	IV 2SLS	IV GMM
PRI	-0.162	-0.07	-0.07
	(0.024)***	(0.04)*	(0.04)*
Fiscal Balance	-4.71	-13.32	-12.12
	(1.11)***	(0.002)***	(4.53)***
Public Investment	-0.077	-0.095	-0.09
	(0.009)***	(0.048)**	(0.04)**
FED Funds Rate	0.003	0.001	-0.001
	(0.023)	(0.04)	(0.043)
Log inflation	0.178	0.19	0.209
	(0.082)**	(0.12)	(0.114)
Reserves	…	-2.65	-2.5
		(1.07)**	(0.813)***
Current account balance	-0.000	-2.04	-1.932
	(0.000)	(0.83)**	(0.627)
TOT	-0.009	-0.002	-0.003
	0.03	(-0.34)	(0.008)
N	128	87	87
Overall R-Square	…	0.41	0.41
Wald Chi-Square	145.82	66.27	51.32

Robust standard errors are in parentheses
* indicates statistical significance at the 10 percent level,
** at the 5 percent level, and *** at the 1 percent level

Table 5. Effects of different political variables on Spreads
Random effects 1/

Variable	Coefficient	R-Square	Obs
Rrexpr	-0.52 (0.25)**	0.46	128
Rrtra	-0.069 (0.21)	0.33	128
Rrpol	-0.22 (0.26)	0.37	128
PolRisk	-0.038 (0.01)***	0.43	172

1/ for space reasons, we are not showing other economic variables.
Each coefficient was estimated with the full model
with the political variable being the only one changing.

VII. CONCLUSIONS

Using a panel of 30 emerging market economies from 1997 to 2007, this paper has investigated the determinants of country risk premiums as measured by sovereign bond spreads. The results show that political risk factors, including expropriation risk, play a significant role in raising sovereign spreads as financial markets require an extra premium for political instability. However, fiscal variables are more important and have a larger impact on spreads. The overall fiscal position matters as countries with both high deficits or debt are at a greater risk of default. An increase in capital spending is found to lower spreads as long as the fiscal deficit does not increase. Another important finding of the paper is that sensitivity of sovereign spreads to fiscal risk factors tends to be asymmetrical, with a larger impact on spreads for countries that experienced previous defaults.

These results have two important policy implications for emerging markets. First, despite the important role of global financial conditions and investors' appetite for risk, country-specific factors and in particular fiscal health are important for reducing borrowing cost in these economies. When fiscal risks are underestimated by policymakers, financial markets tend to punish the countries via wider credit spreads, particularly so in countries with a poor track record in fiscal discipline (or with previous default history). This can in turn lead to more elevated debt service costs and higher policy uncertainty. The importance of fiscal health is also shown in case of higher investment spending, which only helps lower spreads if the fiscal situation is not worsening.

The second implication is that business climate factors, as captured by political risk variables, are key to financial markets' perception of country risks. Not only countries with poor political stability and weak institutions signal their potential lack of commitment to sound economic policies to the markets, but high political risk *per se* may result in lower capital inflows, sub-optimal investment levels and ultimately lower economic growth.

REFERENCES

Alesina, A., Cohen, G.D. and Roubini, N. (1992) "Macroeconomic Policies and Elections in OECD Democracies", *Economics and Politics*, 4: 1-30.

Afonso, A. (2002) "Understanding the Determinants of Government Debt Ratings: Evidence for the Two Leading Agencies", *CISEP Working Paper*, 2.

Afonso, A., Gomes, P., and Rother, P. (2007) " What "Hides" Behind Sovereign Ratings?" *ECB Working Paper,* 711.

Akitoby, B., and Stratmann, T. (2006) "Fiscal Policy and Financial Markets", *IMF Working Paper*, WP/06/16.

AON (2007) "Political Risks: Nationalism Gaining Ground", *Risk Bulletin*, February.

Arora, V., and Cerisola, M. (2001) "How Does U.S. Monetary Policy Influence Sovereign Spreads in Emerging Markets" *IMF Staff Papers*, 48.

Asonuma, T. (2008) "Sovereign Default and Negotiation: Endogenous Recovery Rates, Interest Rate Spreads, and Credit Rating" mimeo.

Baldacci, E. (2007) "Beyond the Davos Consensus: A New Approach to Country Risk", *SACE Working Paper,* 3.

Baldwin R. (2006) "Globalization: The Great Unbundling(s) ", Prime Minister's Office, Economic Council of Finland.

Beck, T., Clarke, G., Groff, A. and Keefer, P. (2001) "New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions (2002 update)", *World Bank Economic Review*, 2001.

Blundell, R., and Bond, S. (1998) "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models", *Journal of Econometrics,* 87.

Buti, M. and Van den Noord, P. (2003) "Discretionary Fiscal Policy and Elections: The Experience of the Early Years of EMU". *OECD Economics Department Working Paper,* ECO/WKP(2003)5.

Cantor, R,, and Packard, F. (1996) "Determinants and Impacts of Sovereign Credit Rating", *The Journal of Fixed Income*, 3.

Cavallo, E., and Valenzuela, P. (2007) "The Determinants of Corporate Risk in Emerging Markets: An Option-Adjusted Spread Analysis" *Inter-American Development Bank Working Paper,* 602.

Ciarlone, P., Piselli, P., and Trebeschi, G. (2007) "Emerging Market Spreads and Global Financial Conditions", *Temi di Discussione Banca d'Italia,* 637.

Dailami, M., Masson, P., and Padou, J.J. (2005) "Global Monetary Conditions Versus Country Specific Factors in the Determination of Emerging Market Debt Spreads" *World Bank Policy Research Working Papers,* 3626.

Eaton, J., and Gersovitz, M. (1981) "Debt with Potential Repudiation: Theoretical and Empirical Analysis", *Review of Economic Studies,* 74.

Eaoton, J., Gersovitz, M., and Stiglitz, J.E. (1986) "The Pure Theory of Country Risk", *National Bureau of Economic Research.* Working Paper Series, No. 1894.

Edwards, S. (1984) "LDC Foreign Borrowing and Default Risk: An Empirical Investigation, 1976-80", *American Economic Review,* 74.

Eichengreen, B., and Mody, A. (1998) "What Explains Changing Spreads on Emerging Market Debt: Fundamentals or Market Sentiment", *National Bureau of Economic Research.* Working Paper Series, No. 6408.

Eichengreen, B., and Leblang, D. (2006) "Democracy and Globalization, National Bureau of Economic Research", *National Bureau of Economic Research.* Working Paper Series, No.12450.

Emran, M., S., and Farazi, S. (2008) " Government Borrowing and Private Credit Growth: Evidence from Developing Countries" paper presented at a FAD Seminar, July.

Faria, A., Mauro, P., Minnoni, M., and Zaklan, A. (2006) "The External Financing of Emerging Market Countries: Evidence from Two Waves of Financial Globalization", *IMF Working Paper*, WP/06/205.

Ferrari, F., and Rolfini, R. (2008) "Investing in a Dangerous World: A New Political Risk Index", *SACE Working Paper,* 6.

Ferrucci, G. (2003) "Empirical Determinants of Emerging Market Economies' Sovereign Bond Spreads", *Bank of England Working Paper,* 205.

Gibson, R., and Sundaresen, S.M. (1999) "A Model of Sovereign Borrowing and Sovereign Yield Spreads", *Paine WebberWorking Paper Series at Columbia University*, EFA0044.

Giavazzi, F., Jappelli T., and Pagano M. (2000) "Searching for Non-Linear Effects of Fiscal Policy: Evidence from Industrial and Developing Countries", *National Bureau of Economic Research.* Working Paper Series, No. 7460.

Gonzales-Hermosillo, B. (2008) "Investors' Risk Appetite and Global Financial Market Conditions", *IMF Working Paper*, WP/08/85.

Gonzales-Rosada, M., and Levy-Yeyati, E. (2006) " Global Factors and Emerging Market Spreads" *Inter-American Development Bank Working Paper,* 552.

Gupta, S., Baldacci, E. Clements, B. and Tiongson, E. R. (2005) "What Sustains Fiscal Consolidations in Emerging Market Countries?", *International Journal of Finance and Economics,* 10.

Hallerberg, M. and Von Hagen, J. (1997) "Electoral Institutions, Cabinet Negotiations and Budget Deficits in the European Union (EU)", *CEPR Working Paper*, 1555.

Hallerberg, M. and Wolff, G. (2008) " Fiscal institutions, ficsal policy and sovereign risk premia in EMU", *Public Choice, p. 279-396.*

Hartelius, K., Kashiwase, K., and Kodres, L. (2008) "Emerging Market Spread Compression: Is It Real or is it Liquitity?", *IMF Working Paper*, WP/08/10.

International Monetary Fund (2008) *Financial Stability Report,*IMF, Washington, DC.

Kamin, S.B., and von Kleinst, K. (1999) "The Evolution and Determinants of Emerging Market Credit Spreads in the 1990s" *BIS Working Paper,* 68.

Kulatika, N., and Marcus, A.J. (1987) "A Model of Strategic Default of Sovereign Debt", *Journal of Economic Dynamics and Control*, 11.

McGuire, P., and Schrijvers, M.A. (2003) "Common Factors in Emerging Market Spreads" *BIS Quarterly Review,* December.

Merton, R. (1974) "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates", *Journal of Finance*, 29.

Min, H.G. (1998) "Determinants of Emerging Market Bond Spreads. Do Economic Fundamentals Matter?" *World Bank Policy Research Working Paper,* 1899.

Moser, C. (2007) "The Impact of Political Risk on Sovereign Bond Spreads. Evidence from Latin America", mimeo.

Obstfeld, M. (1995) "Models of Currency Crises with Self-fulfilling Features", *National Bureau of Economic Research.* Working Paper Series, No. 5285.

Ozatay, F., Ozmen, E., and Sahinbeyoglu, G. (2007) " Emerging Market Sovereign Spreads, Global Financial Conditions, and U.S. Macroeconomic News" *Economic Research Center Working Papers* in Economics, 7.

Pantzalis, C., Stangeland, D., and Turtle, H. (2000) "Political Elections and the Resolution of Uncertainty: The International Evidence", *Journal of Banking and Finance,* 24.

Pesaran, H., Shin, Y., and Smith, R. (1999) "Pooled Mean Group Estimator of Dynamic Heterogeneous Panels", *Journal of the American Statistical Association,* 94.

Persson, T. and G. Tabellini. (1999) Political Economics and Public Finance. In A. Auerbach and M. Feldstein (Eds.). *Handbook of Public Economics. Vol III*. Amsterdam: North Holland.

Rocha, K., and Garcia, F.A. (2006) "Term Structure of Sovereign Spreads in Emerging Markets. A Calibration Approach for Structural Models" mimeo.

Rodrick, D. (1991) "Policy Uncertainty and Private Investment in Developing Countries", *Journal of Development Economics,* 36.

Roubini, N. and J.D Sachs. (1989) "Political and Economic Determinants of Budget Deficits in the Industrial Democracies", *European Economic Review,* 33: 903-938.

Rowland, P., and Torres, J.L. (2004) "Determinants of Spread and Creditworthiness for Emerging Market Sovereign Debt: A Panel Data Study" *Working Paper Banco de la Republica*, Colombia.

Schularick, M. (2006) "Financial Globalization and Emerging Market Bond Price Bubbles: Some Historical Lessons", mimeo.

Singh, M., and Andritky, J. (2005) "Overpricing in Emerging Market Credit-Default-Swap Contracts: Some Evidence from Recent Distress", *IMF Working Paper*, WP/05/125.

Stein, E. and Streb, J. (2004) "Elections and the Timing of Devalutations", *Journal of Development Economics,* 36.

Uribe, M., and Zue, V.Z. (2006) "Country Spreads and Emerging Countries: Who Drives Whom?" *Journal of International Economics,* 69.

Weingast, B., Shepsle, K. and Johnson, C. (1981) "The Political Economy of Benefits and Costs: A Neoclassical Approach to Redistributive Politics", *Journal of Political Economy*, 89: 642-664.

WEF, (2007) *Global Risks 2007. A Global Risk Network Report*, World Economic Forum, Janauary.

Westphalen, M. (2001) "The Determinants of Sovereign Bond Credit Spread Changes", unpublished paper, Universite de Lausanne