Bernoth, Kerstin; von Hagen, Jürgen; Schuknecht, Ludger

Working Paper

Sovereign risk premia in the European government bond market

ZEI working paper, No. B 26-2003

Provided in cooperation with:
Rheinische Friedrich-Wilhelms-Universität Bonn

Suggested citation: Bernoth, Kerstin; von Hagen, Jürgen; Schuknecht, Ludger (2003) : Sovereign risk premia in the European government bond market, ZEI working paper, No. B 26-2003, http://hdl.handle.net/10419/39576

Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Kerstin Bernoth, Jürgen von Hagen, Ludger Schulknecht

Souvereign Risk Premia in the European Government Bond Market

Working Paper

B 26
2003

Sovereign Risk Premia in the European Government Bond Market*

Kerstin Bernoth+, Jürgen von Hagen◊, Ludger Schuknechto

Revised, April 2004

Abstract:

This paper provides a study of bond yield differentials among EU eurobonds issued between 1991 and 2002. Interest differentials between bonds issued by EU countries and Germany or the USA contain risk premia which increase with the debt, deficit and debt-service ratio and depend positively on the issuer's relative bond market size. Global investors' attitude towards credit risk, measured as the yield spread between low grade US corporate bonds and government bonds, also affects bond yield spreads between EU countries and Germany/USA. The start of the European Monetary Union had significant effects on the bond pricing of the member states.

Keywords: asset pricing, determination of interest rates, fiscal policy, government debt

JEL Classification: G12, E43, E62, H63

---

* The authors thank the participants at the CEPR Conference on "Empirical Macro Models of the Euro Economy: Sectoral Performance", the participants of the University of Crete/Leuven Summer School 2003, Stefan Gerlach, and Roel Beetsma for helpful comments. Kerstin Bernoth thanks the members of the ECB Fiscal Policy Division for their encouragement, support and many discussions on the subject during her internship in summer 2002. The views expressed here are those of the author and do not necessarily reflect those of the European Central Bank.

+ ZEI-Center for European Integration Studies. E-mail address: kerstin.bernoth@wiwi.uni-bonn.de

◊ University of Bonn, Indiana University, and CEPR. E-mail address: vonhagen@uni-bonn.de

o European Central Bank, E-mail address: ludger.schuknecht@ecb.int

1. Introduction

The potential effect of public debt on government bond yields is an important issue for economists and fiscal policy makers alike. If government bond yields include risk premia, increasing indebtedness may cause bond yields to go up, thus raising the cost of borrowing and imposing discipline on governments. Market discipline of this kind may be especially relevant and important in a monetary union, such as the US or the new European Monetary Union (EMU), in which the governments of the member states can issue debt, but do not have the possibility to monetize and inflate away excessive debts.

The question whether such risk premia can be identified empirically and how large they are has attracted considerable interest in recent literature. Goldstein and Woglom (1991), Bayoumi, Goldstein and Woglom (1995) and Poterba and Rueben (1997) find that the yield differentials of 39 US states relative to New Jersey depend positively on their levels of debt. Alesina, De Broeck, Prati and Tabellini (1992) use data from 12 OECD countries and show that the differential between public and private bond yields is positively related to the level of public debt. Lemmen (1999) uses yields of bonds issued by state governments in Australia, Canada, and Germany and shows that yield spreads depend positively on the ratio of government debt to GDP. Alexander and Anker (1997), Lemmen and Goodhart (1999), Lonning (2000), Copeland and Jones (2001) and Codogno, Favero and Missale (2003) consistently confirm a positive relationship between public debt and interest rates.

In this paper, we contribute to this line of research in three ways. First, we estimate the effects of fiscal variables on long term government bond yields, using a new data set. Our data consists of yield-at-issue spreads between DM (Euro after 1999) and US dollar denominated bonds issued by several EU governments and Germany or the US government, respectively. This data set has several advantages compared to those used in earlier studies. Looking at DM (Euro) and US dollar denominated bonds allows us to look at debt issued by national and sub-national governments without introducing the issue of exchange rate risk that arises in the comparison of bonds issued by national governments in their national currencies.[1] Furthermore, the comparison of spreads on

[1] Alesina et al. (1992), Flandreau et al. (1998), Goodhart (1999), and Afonso et al. (2003) propose to circumvent this issue by comparing the returns on government debt and 'safe' private debt of corresponding maturity denominated in the same currency. It is not clear, however, that the credit risk of private firms is

such issues is not distorted by differences in national tax regimes. Finally, looking at yields-at-issue assures the comparability of yields at different points in time, since, in contrast to average yields on debt outstanding, the residual maturity is always the full maturity and the bonds are actively traded on the day when the yields are recorded.

Second, using data from before and after the start of EMU, we can directly estimate the effects of monetary union on risk premia paid by European governments. A priori, these effects are ambiguous. Monetary union may increase the default risk of member governments, since they have surrendered their monetary sovereignty and, therefore, the possibility to monetize their debts, and other governments and the monetary union's central bank may not be compelled to rescue governments in financial crises. This presumption is in line with the "No bail-out clause" of the Maastricht Treaty and the historical experience that state governments in the US have defaulted on their debts. However, monetary union may also have reduced perceived default risk, if markets anticipate that member governments in fiscal troubles will be bailed out by other governments or the central bank.

Third, our empirical analysis distinguishes risk premia from liquidity effects in the bond market. Identifying the liquidity component of yield spreads is important, because it points to a lack of financial market integration rather than differences in public debt as a source of yield differentials.[2] Empirically, we observe that German government bond yields are still below those of bonds issued by governments with much better debt positions. This has been interpreted as showing that bond yields do not reflect fiscal performance appropriately (Reuters, June 2002). But the fact that German bonds enjoy a yield advantage compared to others may instead be due to the size of the German bond market and the fact that German bonds can be traded immediately at lower transaction costs and with a smaller risk of price changes due to individual transactions.

Our paper proceeds as follows. Section 2 presents a discrete-time, two-asset portfolio model explaining interest rate differentials between bonds issued by two different governments. It serves to motivate the empirical analysis and derive the

independent of the credit risk of their national governments, as governments in financial crisis might seize private assets or raise taxes and, thus, worsen the borrower quality of private firms.

[2] Blanco (2001) finds significant liquidity premia in the relative pricing of German bonds. Codogno et al. (2003) find a significant effect of trading volumes on euro-area government bond yields supporting the existence of liquidity premia. Gómez-Puig (2003) finds that liquidity, measured by bid-ask spreads, plays an important role in explaining the spreads between euro-denominated bonds issued by different governments.

reduced-form equation estimated subsequently. Section 3 describes the data we use for the estimation. Section 4 reports the estimation results, and Section 5 concludes.

2. A Portfolio Model of Bond Yield Differentials

2.1. The Basic Model

Consider a domestic investor maximizing a utility function that depends positively on expected real wealth, $E_t[w_{t+1}]$ and negatively on its variance, $Var_t[w_{t+1}]$:

$$Max\ U\{E_t[w_{t+1}],\ Var_t[w_{t+1}]\},\ U_1 > 0,\ U_2 < 0. \tag{1}$$

The investor allocates a fraction θ of his real wealth w_t to a domestic security D and a fraction of 1-θ to a foreign security F. Both securities and real wealth are priced in the foreign currency, so that:

$$\theta_t w_t = D_t \tag{2}$$

$$(1 - \theta_t) w_t = F_t \tag{3}$$

We assume that the domestic security is subject to default risk, while the foreign asset is considered risk-free. More specifically, with a positive probability of 1-$P(x_t)$, $0 \leq P(x_t) \leq 1$, the domestic government will be unable to fully serve its debt. Here, x_t indicates a set of variables affecting this probability. In the case of default, the investor receives a fraction τ of his gross payment, $\tau \in [0, 1 + r)$, where r is the interest rate on the domestic bond. Investors incur transaction costs proportional to their investment in bonds which decrease with the liquidity of the bond market. We assume that the foreign bond has benchmark status in the bond market, i.e., the foreign bond market is considered to be more liquid than the domestic bond market. Expected wealth then is:

$$E(w_{t+1}) = (1 + r_t)\theta_t w_t P(x_t) + \tau_t \theta_t w_t (1 - P(x_t)) - \theta_t w_t l_t + (1 + r_t^*)(1 - \theta_t) w_t, \tag{4}$$

where an asterix in the equation indicates the corresponding foreign variables, l is the expected transaction cost in the domestic bond market, and the transaction cost in the foreign market is normalized to zero. The objective function and the budget equations for a representative investor in the foreign country are analogue to the equations (1) and (2) of the domestic investor. We assume no discrimination between domestic and foreign investors in the case of default, $\tau = \tau^*$. The foreign investor's expected real wealth is:

$$E(w_{t+1}^*) = (1+r_t)\theta_t^* w_t^* P(x_t) + \tau_t \theta_t^* w_t^* (1-P(x_t)) - \theta_t^* w_t^* l_t + (1+r_t^*)(1-\theta_t^*) w_t^* \quad (5)$$

Due to the uncertain investment return of domestic securities, the variance of next period's real wealth of the domestic and the foreign investor is non-zero and given by:

$$Var(w_{t+1}) = \theta_t^2 w_t^2 (1+r_t-\tau_t)^2 P(x_t)(1-P(x_t)), \quad (6)$$

for the domestic investor and

$$Var(w_{t+1}^*) = \theta_t^{*2} w_t^{*2} (1+r_t-\tau_t)^2 P(x_t)(1-P(x_t)) \quad (7)$$

for the foreign investor. Utility maximization yields the optimal shares invested in domestic securities, $\hat{\theta}_t$ and $\hat{\theta}_t^*$:

$$\hat{\theta}_t = \frac{P(x_t)(1+r_t) + \tau_t(1-P(x_t)) - l_t - (1+r_t^*)}{\Phi_t (1+r_t-\tau_t)^2 P(x_t)(1-P(x_t))}, \quad (8)$$

$$\hat{\theta}_t^* = \frac{P(x_t)(1+r_t) + \tau_t(1-P(x_t)) - l_t - (1+r_t^*)}{\Phi_t^* (1+r_t-\tau_t)^2 P(x_t)(1-P(x_t))}, \quad (9)$$

where $\Phi_t = -2w_t U_2 / U_1$ and $\Phi_t^* = -2w_t^* U_2^* / U_1^*$ denote the coefficients of relative risk aversion for the domestic and the foreign investor.

Let S be the total supply of bonds issued by the domestic government. Equilibrium in the domestic bond market requires:

$$S_t = D_t + D_t^* = \frac{P(x_t)(1+r_t) + \tau_t(1-P(x_t)) - l_t - (1+r_t^*)}{(1+r_t-\tau_t)^2 P(x_t)(1-P(x_t))} \left(\frac{w_t}{\Phi_t} + \frac{w_t^*}{\Phi_t^*} \right). \quad (10)$$

This can be solved for the interest rate differential:

$$\frac{r_t - r_t^*}{1+r_t} = (1-P(x_t)) \left(1 - \frac{\tau_t}{1+r_t} \right) + \frac{l_t}{1+r_t} + \frac{S(1+r_t-\tau_t)^2 P(x_t)(1-P(x_t))}{(w_t/\Phi_t + w_t^*/\Phi_t^*)(1+r_t)}. \quad (11)$$

In what follows, by the interest rate spread or differential, we mean the term on the left hand side of the equation.

Equation (11) separates the yield spread between the two bonds into three terms. The first term on the right hand side reflects the *default risk premium*. It depends positively on the default probability of the risky issuer country, (1 - $P(x_t)$). The default risk premium decreases with an increase in the fraction of repayment the investor

receives in case of default, τ. Since τ ranges between 0 and (1 + r_t), the default risk premium is always positive.

Second, the bond yield differential depends on the *liquidity risk premium*. The more liquid the domestic bond market, the smaller will be the liquidity risk premium.

The third term is the *country-specific risk premium*. It depends negatively on τ and positively on the variance of the default probability $P(x_t)(1 - P(x_t))$, the gross nominal return (1 + r_t), and the level of the relative risk aversion of investor Φ and Φ^*. The more investors care about the variance of their future wealth w_{t+1} (the larger U_2), the larger will be the interest rate differential between the risky and the risk-free country. Furthermore, the country specific risk premium increases with the total supply of domestic bonds, *S,* relative to total wealth.

2.2. The Reduced-form Equation

To test this model empirically, we estimate the following equation:

$$\frac{r_{it} - r_{jt}^{*}}{1 + r_{it}} = \beta_0 + \beta_1' z_{it} + \Phi_t(\gamma_0 + \gamma_1 z_{it}) + EMU(\delta_0 + \delta_1' z_{it}) + \lambda_t + \mu_i + \varepsilon_{it} \qquad (12)$$

The dependent variable is the yield spread of a bond issued in EU country *i* over the benchmark in currency *j*. z_{it} is a vector containing several variables related to fiscal performance, two dummies for the authority level of the issuing government, an indicator of the cyclical stance of the economy, a liquidity variable, and a maturity variable.

The fiscal variables reflect the government's quality as a borrower. We use three fiscal variables in our regression. The first two are motivated by their common use in policy debates and the Maastricht Treaty. These are the debt/GDP ratio and the deficit/GDP ratio. The third is the ratio of government debt service to current government revenues. This variable is closer in spirit to measures of borrower quality commonly used in corporate finance, such as the ratio of debt service to cash flow. It allows for the fact that governments in different countries may differ in their ability to raise taxes from a given volume of GDP, and it focuses on the constraint high debt burdens impose on the annual budgetary flows. All three fiscal variables relate to the general government. They are measured as the difference relative to the benchmark

country Germany (respectively, the USA) in the case of DM/Euro bonds (respectively, US$ bonds). We include levels and quadratic terms of the fiscal variables to allow for non-linear relationships.[3]

The dummies for the level of government are one for debt issued by state or provincial authorities (SA) and debt issued by local authorities (LA), respectively. Since state and governments have less fiscal sovereignty and tax collecting capacities than national governments, it is likely yields on bonds issued by sub-national governments contain larger default risk premia than central government bond rates.[4]

The inclusion of an indicator of the cyclical stance follows the suggestion of Alesina et al. (1992) that default risk depends on the overall economic situation of a country. In an economic slow-down, government revenues decrease, and the probability of default may rise. Since such effects most likely relate to severe recessions and strong upswings rather than small cyclical movements, our indicator takes the value 1, when the nominal GDP of a country is more than half a standard deviation above its trend (boom), -1 when it is more than half a standard deviation below its trend (recession), and 0 otherwise. Using sample standard deviations accounts for the fact that the volatility of the business cycle varies substantially across countries. The difference of this variable between the issuer and the benchmark country is zero, if both countries are in the same cyclical position; it is (-2) and (2), if one is in a strong boom and the other in a strong recession, and (-1) and 1 in the case of less severe differences in the cyclical stance.[5]

The *liquidity* variable serves to estimate the liquidity premium. Due to lack of data, we cannot follow the conventional approach to use bid-ask spreads, which reflect trading costs in trading securities (Fleming, 2003). However, Gravelle (1999) shows that the correlation between bid-ask spreads and the total supply of debt is significantly negative. This suggests that total volume of supply of a security has a positive effect on its liquidity. Following this reasoning, we assume that liquidity depends on market size

[3] Bayoumi et al. (1995) and Flandreau et al (1998) talk about a 'credit punishing' effect, when interest rate spreads grow non-linearly with the level of fiscal variables.

[4] We regress local/state government bond yield spreads on national fiscal variables since data on local fiscal variables is not available. In this sense we assume that state/local governments will be bailed out by central governments in case of default, and that local governments in general have to pay a higher risk premium.

[5] We also included the nominal GDP as a linear variable in our regressions, but it turned out to be insignificant. Intuitively it makes sense that the yield spread between two countries does not depend solely on the issuer's GDP, but on the relative size of the issuer's GDP to that of the benchmark countries, Germany and the USA. The trend of the individual GDP time series is subtracted for comparability reasons.

and, additionally, that all debt issued by a government in a given currency is homogeneous up to maturity. Thus, the liquidity premium is assumed to be proportional to the ratio of the debt issued by a government in DM/Euro or US$ to the total debt of EU countries issued in DM/Euro or US$.[6]

The *maturity* variable contained in vector z_{it} measures the time to maturity of the bonds at the time of issue and controls for the possibility that default premia vary with the length of the contract. In this case, an investor receives a compensation for investing in long-term bonds instead of buying short-term bonds and rolling them over.

Our model suggests that the general *investors' risk aversion* towards credit risk determines the yield spread between countries. This suggestion is supported by empirical observations. Dungey et al. (2000) show strong evidence of a common international factor in many yield differentials. Deutsche Bank Research (2001) notes that interest rate differentials between EMU member countries widened in periods of financial crises such as the Russian crisis in 1998 or the Turkish currency crisis in 2001. Lemmen (1999) observes that the difference between provincial and federal yields in Australia, Canada, Germany, Switzerland and the US widened considerably after the outbreak of the Asian crisis in 1997 and the Russian default of August 1998. Thus, it seems that in periods of global financial crises or uncertainty investors move to safer and more liquid assets and that bond yield spreads increase as a result.

Since investors' risk aversion is not directly observable, we use, similar to Codogno et al. (2003) and Favero (2004), the yield spread between low grade US corporate bonds (BBB) and benchmark US government bonds as an empirical proxy.[7] Figure 1 illustrates the development of this proxy between 1990 and 2002. After the peak in the early months of 1991, when the yield spread was more than 2.5 basis points, one observes a continuous downward trend of the corporate-government bond yield spread, which reflects the growing investors' optimism and willingness to take risk. In 1999, with the burst of the asset price bubble, the yield spread increases sharply by more than 1.5 basis points and fluctuates between 1.5 and 2 basis points in the years after, which

[6] We also used the issue size as an alternative proxy for liquidity, but since this variable shows insignificant coefficients, we exclude it from reported regression analysis.

[7] A variable that measures the respective corporate bond spread for the complete Euroarea is not available, but the empirical literature on sovereign bond spreads of emerging markets shows that spreads are sensitive to US risk factors (see, e.g., Barnes et al. (1997), Kamin et al. (1999), Eichengreen et al. (2000)). Therefore, data on US corporate-government bond yield spreads can be used as a good proxy for the overall investors' risk attitude.

illustrates the market participants' skepticism and risk aversion in that period.

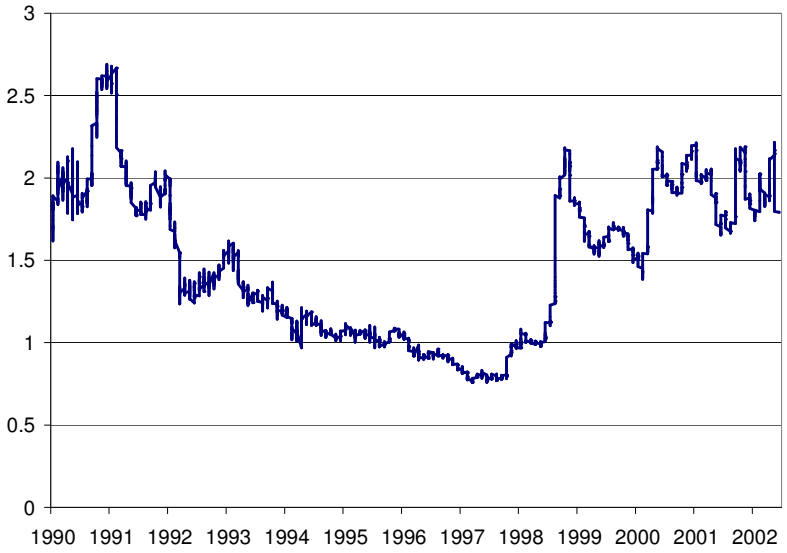

Figure 1: Yield Spread between US low grade Corporate Bonds and US Government Bonds

To estimate the effects of EMU on yield spreads, we introduce an *EMU* dummy that takes the value of one for all EMU member countries after 1999 and for Greece after 2001 and zero otherwise. A significant coefficient on this dummy points to a general effect of EMU on yield spreads of all member countries. Furthermore, we interact the *EMU* dummy with the fiscal variables and the liquidity variable, to see whether EMU has changed the effect of the fiscal variables and market liquidity on interest rates. Finally, all regressions are estimated with and without time fixed effects, λ_t.[8]

[8] We also estimated the regressions with country fixed effects, μ_i. The fiscal variables in these regressions have either insignificant or significantly smaller coefficients than in the regressions with, and without, time fixed effects. Table A1 in the Appendix shows the estimation results when regressing the estimated country fixed effects on the average debt, deficit, and debt service differential of each country. The results show that the country fixed effects are significantly and positively related to the deficit and debt service variables. This suggests that the impact of fiscal variables on government bond yield spreads will be biased downwards when controlling for country fixed effects, since the latter also reflect the default risk of each country. For this reason, we do not focus our discussion on regressions with country fixed effects. The estimation results with country fixed effects are available from the authors on request.

3. Data Description

3.1. Data

The data on the yield spreads were provided by Capital DATA Bondware. We compare government bonds issued by the 13 EU countries, i.e., Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Portugal, Spain, Sweden, and the UK, between 1991 and beginning of 2002 that are denominated on the one hand in DM before 1998 and subsequently in Euro, and on the other hand in US$. In this way, interest differentials will be net of expected changes in exchange rates between currencies.

Alesina et al. (1992) argue that default risk premia might be lower for foreign-currency than domestic-currency issues, if countries issue little debt in foreign currencies and because a country has much to lose by defaulting in international markets. Table A2 in the Appendix reports the amount of US$ and DM denominated bond issues of each country during our sample period in million Euros. The figures suggest that this concern is not substantiated for our data set. Except France, all EU countries issued a large amount of their debt in DM or US$. Between 1991 and 2001, Italy issued every year on average 3,905 million Euros, Sweden 1,834 million Euros, and Finland and Spain around 800 million Euros of their debt in US$. Austria, Denmark, Finland, Spain, and Sweden issued between 1991 and 1998 on average every year more than 500 million Euro of their debt in DM.

The interest differential for the DM/Euro denominated bonds is measured as the difference in the yield to maturity at the time of issue between the national bond under consideration and an equivalent German government bond. Similarly, the differential for the bonds issued in US$ is the difference to an equivalent US government bond. In each case, we take the German or US benchmark indicated by Capital DATA Bondware, which is the nearest new issue of the German or US federal government, respectively. The whole data set consists of 185 DM/Euro bond spreads and 132 US$ bond spreads issued by all 15 EU countries. 97 of these DM/Euro denominated bonds and 90 of these US$ bonds are issued before EMU. Recall that, in view of equation (11), all interest differentials are divided by the gross interest rate factor of the respective national bond.

Variable	Desciption	Average	Std. Dev.	Min.	Max.
Spread S_{it}	The spread between the yield of a government bond issue of an EU country and a comparable goverment bond issued in the same currency related to the gross nominal return of the government bond issue. Expressed in basis points. Compare equation (11) . Source: Capital DATA Bondware.	37.41	35.40	-28.08	439.86
Debt	Difference of debt to GDP outstanding at the end of the fiscal year between the issuer country and the benchmark country. *Source:* European Commission (Ameco database)	10.19	24.42	-49.22	90.86
Deficit	Difference of deficit to GDP (including debt service payments) at the end of the fiscal year between the issuer country and the benchmark country. *Source:* European Commission (Ameco database)	0.48	2.31	-8.32	10.13
Debt Service	Difference of debt service payments to total revenue in the current fiscal year between the issuer country and the benchmark country. *Source* : European Commission (Ameco database)	0.01	0.05	-0.13	0.29
Corp. Spread	Spread between 7 to 10 years low grade corporate bonds (BBB) and 7 to 10 government bonds in the US to the time of issuance. *Source:* Meryll Lynch	1.46	0.45	0.79	2.68
Maturity	Time to maturity of the government bond issue measured in years. *Source:* Capital DATA Bondware.	8.37	5.64	1.6	30.1
Liquidity	The ratio of the total debt of the issuer country over the total debt of the EU issued in DM/Euro or US$. *Source:* European Commission (Ameco database) and own calculations.	10.88	9.69	0.71	29.84
Business Cycle	The difference of the business cycle variable between the issuer country and the benchmark county, which collates the value 1 when the detrended and standardized nominal GDP is bigger than 0.5, the value -1, when it is smaller then -0.5 and 0 otherwise.	-0.19	0.79	-1	1
SA	Dummy variable when the sovereign borrower is the State/provincial authority.	0.27	0.44	0	1
LA	Dummy variable when the sovereign borrower is the local authority.	0.10	0.31	0	1
EMU	Dummy variable for all member countries of the EMU after 1998.	0.36	0.48	0	1

Table 1: Variable Description and Summary Statistics

The corporate spreads variable, which measures the difference between 7 to 10 year low grade corporate bonds (BBB) and 7 to 10 year benchmark government bonds in the USA, is provided by Merrill Lynch. All other macro variables like the debt/GDP,

deficit/GDP, debt service/revenue, and the liquidity measured as the share of the issuers debt over the overall European debt, are provided by Ameco.[9]

Detailed summary statistics of all variables used in the regressions are listed in Table 1.

3.2. A Descriptive Look at the Data

Figures A1 – A3 in the Appendix plot the yield spreads of EU central government bond issues over time. The figures exclude bonds issued by state and provincial governments, since we expect these to incorporate a positive risk premium, and their inclusion would, in this case, deteriorate the graphical analysis.

A striking aspect of Figure A2 is the outlier of a Swedish bond issued in 1992. With a yield of more than 450 basis points above an equivalent US government bond, this observation is more than four times higher than all other yield spreads in this data set. The Swedish financial crisis in 1992 is a reasonable explanation and provides evidence of financial markets' concern that Sweden might have had serious problems repaying its debt. In Figure A3 we drop this outlier to better illustrate of the development of the remaining bond yield spreads.

As shown, the bond yields of all EU countries converged between 1991 and 1997 to German and US levels. This development may reflect the increased fiscal discipline of the EU countries during this period. After 1997, except for Greece, there is a divergence of EU interest rates relative to German and US levels.

Figures A4 and A5 show the yield spreads of the EU countries as related to their debt differentials and Figures A6 and A7 the yield spreads are related to the debt service differentials relative to Germany or the US.[10] In all four figures, we observe a positive relationship between debt, or debt service, differentials and interest rate spreads, which supports our hypothesis that fiscal discipline has a decreasing effect on government bond yields. The positive relationship between these fiscal variables and bond yield spreads seems to be mainly driven by the Greek observations. It is interesting that, although the

[9] Ameco is the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs. The main data source is Eurostat (the Statistical Office of the European Commission), complemented, where necessary, by other appropriate national and international sources.
[10] The figures exclude again bonds issued by state and provincial governments and the Swedish outlier observed in 1992.

Belgium debt ratio is much higher, Belgium yield spreads are not higher than the yield spreads of Denmark.

4. Estimation Results

4.1. DM/Euro Bonds

Tables 2 and 3 report the estimation results for the DM/Euro denominated bonds with and without time fixed effects. The first regression in both tables contains all three fiscal variables, the debt/GDP, deficit/GDP and debt service/revenue differential, while the following regressions include each of them separately to control for collinearity and exclude insignificant variables. Since the time fixed effects improve the precision of the estimates without changing the basic results, we focus the discussion on the estimates in Table 3.

The results indicate that a positive relation between yield spreads and the fiscal variables, and that EMU membership changes this relation significantly. Before EMU, and for non-EMU countries after 1998, an increasing debt ratio relative to Germany widens the interest rate spread with small decreasing marginal effects. This result contradicts the 'credit punishing hypothesis' of Goldstein and Woglom's (1991) and supports the estimation results of Lemmen and Goodhart (1999). A debt ratio exceeding Germany's by 25 percent of GDP causes a yield spread of 30 basis points, while a debt ratio exceeding Germany's by 50 percent results in a yield spread of 47.5 basis points. EMU membership reduces the linear effect of debt on interest rates, but increases the nonlinear, marginal effect.[11] The results imply that the risk premium is lower after the start of EMU for countries with debt ratios no larger than 68.5 percent above Germany's ratio and higher for countries with debt ratios larger than that. This is consistent with the view that markets anticipate fiscal support for EMU countries in financial distress unless these countries had been very undisciplined before.

[11] The *F*-test rejects at every significance level the hypothesis that the effect of debt ratios on yield spreads is extinguished for EMU countries.

	Regression			
	1	2	3	4
Constant	-19.92 (0.09)	-14.07 (0.05)	-4.11 (0.54)	2.35 (0.75)
Debt	0.57 (0.63)	1.37 (0.00)		
$Debt^2$	-0.01 (0.24)	-0.01 (0.00)		
Deficit	-1.69 (0.47)		2.54 (0.00)	
$Deficit^2$	0.18 (0.68)		0.90 (0.00)	
Debt Serv.	204.28 (0.77)			-45.10 (0.63)
Debt $Serv.^2$	1962.30 (0.48)			1601.42 (0.00)
Liquidity	-0.39 (0.56)	-0.71 (0.03)	-0.46 (0.08)	-1.05 (0.00)
Corp.-Spread	18.76 (0.07)	12.99 (0.01)	5.83 (0.26)	4.89 (0.31)
Co-Spr.* Debt	0.39 (0.68)			
Co-Spr.* $Debt^2$	0.00 (0.87)			
Co-Spr.* Deficit	2.35 (0.26)			
Co-Spr.* $Deficit^2$	0.09 (0.80)			
Co-Spr.* DebtServ.	-314.41 (0.61)			
Co-Spr.*DebtServ.^{2}	-203.50 (0.93)			
Co.Spr.*Liquidity	-0.28 (0.62)			
Maturity	1.58 (0.00)	1.48 (0.00)	1.84 (0.00)	1.54 (0.00)
Bus. Cycle	-3.37 (0.06)	-4.72 (0.00)	-1.79 (0.21)	-5.01 (0.00)
SA	13.29 (0.03)	13.62 (0.05)	3.27 (0.49)	12.07 (0.03)
LA	13.37 (0.01)	14.13 (0.01)	10.57 (0.03)	13.03 (0.01)
EMU	-8.64 (0.31)	-0.08 (0.99)	-1.01 (0.85)	-2.95 (0.50)
Debt*EMU	-1.58 (0.04)	-1.29 (0.00)		
$Debt^2$*EMU	0.00 (0.95)	0.02 (0.01)		
Deficit*EMU	-1.92 (0.54)		-5.37 (0.02)	
$Deficit^2$*EMU	-0.02 (0.97)		-1.24 (0.00)	
Debt Serv.*EMU	1018.42 (0.06)			179.41 (0.04)
Debt $Serv.^2$*EMU	3781.61 (0.67)			
Liquidity*EMU	0.76 (0.12)	0.42 (0.09)		0.88 (0.00)
R^2	0.68	0.44	0.54	0.59
N	185	185	185	185

P-values in paranthesis, R^2 is the proportion of the total variation in S_{it} explained by the regression. The Debt, Deficit, Debt Service, and Business Cycle variables are related to values of benchmark country Germany.

Table 2: Estimation Results for DM/Euro Denominated Bonds without Fixed Effects

	Regression			
	1	2	3	4
Constant	**-8.04** (0.64)	**-1.40** (0.93)	**-0.36** (0.98)	**23.92** (0.04)
Debt	**1.07** (0.33)	**1.45** (0.00)		
$Debt^2$	**-0.02** (0.12)	**-0.01** (0.00)		
Deficit	**-1.20** (0.70)		**2.42** (0.03)	
$Deficit^2$	**0.27** (0.62)		**0.97** (0.00)	
Debt Serv.	**184.05** (0.76)			**-87.49** (0.32)
Debt $Serv.^2$	**1711.34** (0.50)			**1772.54** (0.00)
Liquidity	**-0.14** (0.84)	**-0.52** (0.09)	**-0.38** (0.20)	**-0.95** (0.00)
Corp.-Spread	**18.63** (0.02)	**20.17** (0.00)	**5.47** (0.22)	**6.53** (0.09)
Co-Spr.* Debt	**-0.21** (0.82)			
Co-Spr.* $Debt^2$	**0.00** (0.58)			
Co-Spr.* Deficit	**1.93** (0.43)			
Co-Spr.* $Deficit^2$	**0.09** (0.83)			
Co-Spr.* DebtServ.	**-249.68** (0.63)			
Co-Spr.*DebtServ.^{2}	**-173.19** (0.93)			
Co.Spr.*Liquidity	**-0.43** (0.37)			
Maturity	**1.55** (0.00)	**1.38** (0.00)	**1.74** (0.00)	**1.57** (0.00)
Bus. Cycle	**-0.70** (0.68)			
SA	**15.68** (0.01)	**18.59** (0.01)	**7.57** (0.12)	**16.54** (0.00)
LA	**15.76** (0.00)	**18.74** (0.00)	**13.58** (0.01)	**17.53** (0.00)
EMU	**-17.45** (0.06)	**10.53** (0.08)	**-9.26** (0.21)	**-12.07** (0.05)
Debt*EMU	**-1.29** (0.06)	**-1.37** (0.01)		
$Debt^2$*EMU	**0.00** (0.98)	**0.02** (0.01)		
Deficit*EMU	**-1.83** (0.55)		**-6.66** (0.00)	
$Deficit^2$*EMU	**-0.09** (0.86)		**-1.55** (0.00)	
Debt Serv.*EMU	**1254.18** (0.01)			**191.57** (0.02)
Debt $Serv.^2$*EMU	**-1111.08** (0.91)			
Liquidity*EMU	**0.72** (0.06)		**0.51** (0.05)	
R^2	**0.73**	**0.48**	**0.62**	**0.64**
N	**185**	**185**	**185**	**185**

P-values in paranthesis, R^2 is the proportion of the total variation in S_{it} explained by the regression. The Debt, Deficit, Debt Service, and Business Cycle variables are related to values of benchmark country Germany.

Table 3: Estimation Results for DM/Euro Denominated Bond with Time-Fixed Effects

Regression (3) shows that an increasing deficit ratio relative to Germany increases the yield differential with positive marginal effects. Before EMU, and for non-EMU countries after 1998, a deficit differential of one percent relative to Germany causes a yield spread of 3.39 basis point.[12] If the deficit rises from one percent to two percent relative to Germany, the yield differential increases by 5.33 basis points due to the non-linear effect. EMU-membership changes this punishing effect significantly. The EMU dummy interacted with the deficit variables shows negative and significant coefficients in both tables. In the regression without time fixed effects, a *F*-test does not reject the hypothesis that the effect of deficits on interest rates vanishes after the start of EMU. When we control for time fixed effects, this hypothesis is rejected at the 3 percent significance level. This result may be driven by the fact that the two largest member countries, Germany and France, had the largest deficits in the early years of EMU.

According to regression (4), the impact of the debt service ratio on interest rates is positive and shows an increasing marginal effect, which supports the 'credit punishing' hypothesis. Before EMU, and for non-EMU countries after 1998, a debt service/revenue differential of five percent relative to Germany causes an interest rate spread of 4.43 basis points. With EMU, the debt service ratio gains in importance. A debt service/revenue differential of the same magnitude in an EMU country explains an interest spread of around 14 basis points. The R^2 is higher in the regressions when the debt service ratio is included than in the regressions with either debt or deficit ratios as alternative regressors. Accordingly, this fiscal variable explains more of the variation in yield spreads across EU countries than debt and deficit ratios, the two variables commonly used in policy debates and the Maastricht Treaty.

The *Business Cycle* variable shows negative and significant coefficients in the regressions without controlling for fixed effects. Accordingly, when the issuing country is in a good economic condition relative to Germany, its interest differential decreases. In Table 3 the coefficients of this variable turn out to be insignificant, since year dummies filter the effect of business cycle variations on yield spreads. The dummies SA and LA are positive and significant in all regression. Local governments' interest rates are 15 basis points higher than the interest rate on central government bonds.

[12] Note that deficits are expressed by positive figures.

Yield differentials across European countries reflect liquidity risk. The liquidity variable shows negative and significant coefficients in almost all regressions. An increase of the relative debt size by one percent causes a reduction of the issuer country's interest rate by around 0.7 basis points. An interesting result is that this liquidity effect diminishes or even vanishes with EMU, as shown by the positive and significant coefficients on the *Liquidity*EMU* variable in most regressions. This is consistent with the notion that financial market integration has become more complete in Europe.

In half of our regressions, the *Corporate Spread* variable has positive and significant coefficients. Accordingly, in periods of high risk aversion, measured by a large spread between low grade US corporate bonds and US government bonds, the interest differentials of EU countries versus Germany rise, which supports the result of Codogno et al. (2003). When the corporate-government bond yield spread increases by one percent, EU countries pay interest rates that are additional 20 basis points smaller than the one of Germany. The impact of fiscal performance and market liquidity on yield spreads seems to stay unaffected by the degree of investors' risk aversion.

Finally, yield spreads increase by around 1.6 basis points with every additional year to maturity.

4.2. US$ Bonds

Tables 4 and 5 show the estimation results for US$ denominated bonds.[13] The regressions in the second table are estimated with year dummies and therefore control for time fixed effects. We focus the discussion of the estimation results on the estimates reported in Table 5.

The estimation results support that yield spreads between EU countries and the USA are affected by fiscal performance. The yield spread increases with the debt, deficit, and debt service differential between the issuer country and the USA. The debt ratio shows decreasing marginal effects and the debt service ratio increasing marginal effects on interest rates. According to regression (2), a debt differential of 25 percent causes for non-EMU countries a yield spread of 35.5 basis points. The significant coefficients on

[13] For the estimations, we dropped the Swedish outlier described in Section 4.2.

	Regression			
	1	2	3	4
Constant	**7.93** (0.68)	**9.81** (0.32)	**-15.67** (0.11)	**20.85** (0.19)
Debt	**0.36** (0.58)	**1.14** (0.02)		
$Debt^2$	**0.00** (0.74)	**-0.01** (0.09)		
Deficit	**-3.61** (0.4)		**0.34** (0.91)	
$Deficit^2$	**1.68** (0.09)		**3.27** (0.05)	
Debt Serv.	**555.15** (0.10)			**576.03** (0.01)
Debt $Serv.^2$	**1774.57** (0.20)			**3687.16** (0.00)
Liquidity	**-3.13** (0.02)	**-1.04** (0.04)	**-0.58** (0.11)	**-3.20** (0.01)
Corp.-Spread	**33.89** (0.01)	**25.86** (0.00)	**38.34** (0.00)	**16.26** (0.10)
Co-Spr.* Debt	**-0.56** (0.29)	**-0.39** (0.03)		
Co-Spr.* $Debt^2$	**0.00** (0.90)			
Co-Spr.* Deficit	**4.21** (0.16)		**1.40** (0.43)	
Co-Spr.* $Deficit^2$	**-1.55** (0.03)		**-2.12** (0.03)	
Co-Spr.* DebtServ.	**-104.67** (0.66)			**-252.64** (0.08)
Co-Spr.*$DebtServ.^2$	**-745.24** (0.54)			**-1792.20** (0.03)
Co.Spr.*Liquidity	**0.98** (0.25)			**1.07** (0.12)
Maturity	**1.54** (0.00)	**1.33** (0.00)	**1.39** (0.00)	**1.35** (0.00)
Bus. Cycle	**-9.56** (0.00)	**-11.10** (0.00)	**-10.83** (0.00)	**-11.05** (0.00)
SA	**11.28** (0.07)	**26.40** (0.00)	**13.51** (0.00)	**24.43** (0.00)
LA	**25.76** (0.00)	**27.94** (0.00)	**18.76** (0.04)	**32.06** (0.00)
EMU	**-59.04** (0.21)	**-8.45** (0.27)	**-4.89** (0.50)	**-2.35** (0.74)
Debt*EMU	**-1.60** (0.07)	**-1.58** (0.04)		
$Debt^2$*EMU	**0.07** (0.16)	**0.04** (0.02)		
Deficit*EMU	**-37.13** (0.06)			
$Deficit^2$*EMU	**7.89** (0.22)			
Debt Serv.*EMU	**-2042.27** (0.25)			
Debt $Serv.^2$*EMU	**-10672.76** (0.47)			
Liquidity*EMU	**4.22** (0.14)			**0.93** (0.06)
R^2	**0.79**	**0.45**	**0.49**	**0.72**
N	**132**	**132**	**132**	**132**

P-values in paranthesis, R^2 is the proportion of the total variation in S_{it} explained by the regression. The Debt, Deficit, Debt Service, and Business Cycle variables are related to values of benchmark country USA.

Table 4: Estimation Results for US$ Denominated Bonds without Fixed Effects

	Regression			
	1	2	3	4
Constant	**109.03** (0.00)	**72.87** (0.02)	**54.88** (0.03)	**74.72** (0.01)
Debt	**0.13** (0.86)	**2.17** (0.01)		
$Debt^2$	**-0.02** (0.11)	**-0.03** (0.06)		
Deficit	**-0.82** (0.86)		**5.59** (0.00)	
$Deficit^2$	**-0.55** (0.54)		**0.14** (0.81)	
Debt Serv.	**1156.10** (0.00)			**602.00** (0.00)
Debt $Serv.^2$	**1230.16** (0.39)			**1621.99** (0.00)
Liquidity	**-4.59** (0.00)	**-3.51** (0.01)	**-1.25** (0.01)	**-5.02** (0.00)
Corp.-Spread	**-29.31** (0.11)	**-17.69** (0.26)	**-1.62** (0.88)	**-23.12** (0.11)
Co-Spr.* Debt	**0.08** (0.89)	**-0.95** (0.01)		
Co-Spr.* $Debt^2$	**0.01** (0.41)	**0.01** (0.09)		
Co-Spr.* Deficit	**4.10** (0.16)			
Co-Spr.* $Deficit^2$	**-0.27** (0.67)			
Co-Spr.* DebtServ.	**-666.91** (0.00)			**-278.68** (0.01)
Co-Spr.*$DebtServ.^2$	**-293.15** 0.82			**2.49** (0.00)
Co.Spr.*Liquidity	**2.02** (0.01)	**1.65** (0.02)		
Maturity	**1.36** (0.00)	**1.39** (0.00)	**1.37** (0.00)	**1.19** (0.00)
Bus. Cycle	**-9.20** (0.00)	**-12.43** (0.00)	**-6.08** (0.01)	**-9.40** (0.00)
SA	**12.01** (0.16)	**22.90** (0.01)	**11.26** (0.17)	**19.59** (0.00)
LA	**31.69** (0.00)	**33.65** (0.00)	**23.64** (0.01)	**37.26** (0.00)
EMU	**-82.06** (0.16)	**-12.91** (0.16)	**-30.51** (0.01)	**-2.29** (0.79)
Debt*EMU	**-2.70** (0.01)	**-1.64** (0.09)		
$Debt^2$*EMU	**0.05** (0.28)	**0.03** (0.10)		
Deficit*EMU	**-64.95** (0.00)			
$Deficit^2$*EMU	**13.93** (0.01)			
Debt Serv.*EMU	**-1490.94** (0.40)			
Debt $Serv.^2$*EMU	**4480.76** (0.73)			
Liquidity*EMU	**8.53** (0.02)		**1.50** (0.03)	
R^2	**0.82**	**0.56**	**0.55**	**0.78**
N	**132**	**132**	**132**	**132**

P-values in paranthesis, R^2 is the proportion of the total variation in S_{it} explained by the regression. The Debt, Deficit, Debt Service, and Business Cycle variables are related to values of benchmark country USA.

Table 5: Estimation Results for US$ Denominated Bonds with Time-fixed Effects

the EMU dummy interacted with the debt variables show that the influence of debt ratios on yield spreads changes with EMU. A coefficient test cannot reject the hypothesis that the coefficients on the debt variable and the latter interacted with the EMU dummy are jointly zero. Accordingly, the interest rates for EMU countries stay unaffected by their debt ratio. Contrarily, the impact of deficits and debt service ratios on bond yields is unaffected by EMU membership. Independent of EMU membership, the interest rate of an EU country increases by 5.59 basis points when the deficit differential relative to the USA increases by one percent. An EU country with a debt service/revenue spread of 0.05 pays an interest rate that is 34.15 basis points bigger compared to the interest rate in the USA.

Similar to the estimation results for the DM/Euro denominated bonds, the R^2 is the highest, when we include the debt service ratio in the regression. Accordingly, the debt service ratio explains more of the variation of EU government bond yield spreads than debt/GDP and deficit/GDP ratios, which are closely linked to the Maastricht Treaty.

From the magnitude of the coefficients on the liquidity variable one can conclude that US$ denominated bonds contain bigger liquidity risk premia than DM/Euro denominated bonds. The interacted liquidity variable with the EMU dummy shows significant and positive coefficients in three regressions, which indicated that the liquidity risk premium decreases after EMU.

The variable measuring the corporate-government bond yield spread in the USA shows positive and significant coefficients in all regressions, when we do not control for time fixed effects. A rise in this spread by one percent, which reflects an increase of investors' risk aversion towards credit risk, causes the yield spread between EU countries and the USA to rise by more than 20 basis points. When we control for time fixed effects, this effect disappears, which is not very surprising. While for the DM/Euro denominated bonds the level of the *Corporate Spread* variable does not effect the impact of fiscal variables on yield spreads, we observe that for US$ denominated bonds fiscal variables become less important in explaining yield differentials across EU countries if the corporate-government bond spread rises. The estimation results show further that also the impact of liquidity on bond yield spreads seems to depend on the degree of investor's risk aversion. In risky periods the overall decreasing effect of the relative debt size of the issuer country on the yield spread, due to a positive liquidity premium, diminishes.

The estimation results in both tables support the results for the DM/Euro denominated bonds and show that the interest differential of EU countries versus the USA depends positively on the time to maturity of the bond issue, and that local and state governments pay in general higher interest rates on their debt than central governments. Interest differentials are affected by the relative position of the issuer country on its business cycle. If the USA is in a recession and an EU country in a boom, the yield spread between these two countries decreases by around 20 basis points.

5. Conclusions

This paper contributes to the literature on the impact of fiscal policies on interest rates by analyzing the role of capital markets on the sustainability of public finances in the euroarea. We examine whether bond yield differentials across EU countries are determined by default and/or liquidity risk aspects, and whether EMU had significant impact on bond pricing. We exploit a unique data set of US$ and Euro denominated government bond issue spreads between 1991 and 2002, which has the advantage that we can ignore exchange risks and distortions by differences in national tax regimes.

Our results show that yield spreads of EU countries versus Germany or the USA are affected by international risk factors and reflect positive default and liquidity risk premia. The default risk premium is positively affected by the debt and debt service ratios of the issuer country. This is consistent with the notion that credit markets monitor fiscal performance and exert disciplinary pressure on governments. The debt service variable explains more variation in yield spreads across EU countries than both the debt or the deficit variable. Countries whose national debt has a larger share in total EU debt pay lower interest rates than EU countries with smaller shares.

Liquidity risk premia are reduced with EMU membership, which points to an increase in financial market integration. For DM/Euro denominated bonds, EMU membership reduces the linear effect of debt on default risk premia but increases the non-linear, marginal effect. Accordingly, EMU members enjoy a lower risk premium than before, but this benefit declines with the size of public debt compared to Germany. This is consistent with the view that markets anticipate fiscal support for EMU countries in financial distress unless these countries had been very undisciplined before. In

contrast, the impact of debt service on interest rates rises with EMU. Thus, monetary union does not seem to have weakened the disciplinary function of credit markets.

Bibliography

Afonso, A. and Strauch, R. (2003). "Interest Rate Swap Spreads and Policy Events: Some Evidence from the EU", *mimeo*.

Alesina, A., De Broeck, M., Prati, A. and Tabellini, G. (1992). "Default Risk on Government Debt in OECD Countries", *Economic Policy* **15**, 427-451.

Alexander, V. and Anker, P. (1997). "Discipline and the Question of Convergence of National Interest Rates in the European Union", *Open Economies Review* **8**, 335-352.

Arnold, I. and Lemmen, J. (2001). "The Vulnerability of Banks to Government Default Risk in the EMU", *International Finance* **4**, 101-125.

Arora, V. and Cerisola, M. (2001). "How does US Monetary Policy Influence Sovereign Spreads in Emerging Markets?" International Finance Working Paper No. 97-1.

Barnes, K. and Cline, W. (1997). "Spreads and Risks in Emerging Market Lending", Institute of International Finance Working Paper No. 97-1.

Bayoumi, T.A., Goldstein, M. and Woglom, G. (1995). "Do Credit Markets Discipline Sovereign Borrowers? Evidence from US States", *Journal of Money, Credit, and Banking* **27**, 1046-1059.

Blanco, R. (2001). "The Euro-Area Government Securities Market: Recent Developments and Implications for Market Functioning", Banco de Espana-Servicio de Estudios Working Paper 0120.

Capeci, J. (1991). "Credit Risk , Credit Ratings and Municipal Bond Yields: A Panel Study", *National Tax Journal* **44**, 41-56.

Capeci, J. (1994). "Local Fiscal Policies, Default Risk, and Municipal Borrowing Costs", *Journal of Public Economics* **53**, 73-89.

Codogno, L., Favero, C. and Missale, A. (2003). "Yield Spreads on EMU Government Bonds", *Economic Policy* **18**, 503-532.

Copeland, L. and Jones, S.-A. (2001). "Default Probabilities of European Sovereign Debt: Market-based estimates", *Applied Economic Letters* **8**, 321-324.

Dungey, M., Martin, V.L. and Pagan, A.P. (2000). "A Multivariate Latent Factor Decomposition of International Bond Yield Spreads", *Journal of Applied Econometrics* **15**, 697-715.

Eichengreen, B. and Mody, A. (2000). " What explains Changing Spreads on Emerging Market Debt?" in S. Edwards (eds.), *Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies*, NBER Conference Report series, University of Chicago Press, Chicago and London, 107-134.

Ellis, M. and Schansberg, D.(1999). "The Determinants of State Government Debt Financing", *Public Finance Review*, 571-587.

Favero, C.A. and Giavazzi (2004). “Inflation Targeting and Debt: Lessons from Brazil”, NBER Working Paper Nr. w10390.

Flandreau, M., Le Cacheux and Zumer, F. (1998). "Stability without a pact? Lessons from the European Gold Standard, 1880-1914", *Economic Policy* **26**, 117-162.

Flemming, M.J. (2003). "Measuring Treasury Market Liquidity", Federal Reserve Bank of New York Economic Policy Review **9**, 83-108.

Goldstein, M., Woglom, G. (1992). "Market Based Fiscal Discipline in Monetary Unions: Evidence from the US Municipal Bond Market", in M. Canzoneri, V. Grilli, and P. Masson (eds.) *Establishing a Central Bank*, Cambridge University Press, 1992.

Gravelle, T. (1999). “Liquidity of the Government of Canada Securities Market: Stylized Facts and Some Market Microstructure Comparisons to the United States Treasury Market”, Bank of Canada Working Paper 99-11.

Heinemann, F. and Winschel, V. (2001). "Public Deficit and Borrowing Costs: The Missing Half of Market Discipline", ZEW Discussion Paper No. 01-16.

Kamin, S.B. and von Kleist, K. (1999). “The Evolution and Determinants of Emerging Market Credit Spreads in the 1990s’, Board of Governors of the Federal Reserve System, International Finance Discussion Papers No. 653.

Lemmen, J. (1999). "Managing Government Default Risk in Federal States", FMG Special Paper No. 116.

Lemmen, J. and Goodhart, C. (1999). "Government Bond Markets: A Panel Data Econometric Analysis", *Eastern Economic Journal* **25**, 77-107.

Lonning, I.M. (2000). "Default Premia on European Government Debt", *Weltwirtschaftliches Archiv* **136**, 259-283.

Poterba, J. and Rueben, K. (1999). "State Fiscal Institutions and the U.S. Municipal Bond Market", in J. Poterba and J. von Hagen (eds.) *Fiscal Institutions and Fiscal Performance*, University of Chicago Press, 1999.

Appendix

Country Dummies	1	2	3
	US$		
constant	**29.06** (0.01)	**22.82** (0.03)	**38.52** (0.00)
Debt	**0.60** (0.12)		
Deficit		**9.87** (0.06)	
Debt Service			**468.68** (0.00)
R^2	0.22	0.31	0.60
Obs.	12	12	12
	US$		
constant	**-12.41** (0.20)	**-7.21** (0.29)	**-15.26** (0.15)
Debt	**0.52** (0.12)		
Deficit		**11.19** (0.01)	
Debt Service			**258.71** (0.10)
R^2	0.21	0.46	0.23
Obs.	13	13	13

Table A1: Relationship between Country Dummies and Fiscal Variables

	Austria		Belgium		Denmark		Finland	
	US$	DM	US$	DM	US$	DM	US$	DM
1991	254.48	-	848.25	-	-	-	254.48	485.73
1992	1017.89	766.94	-	255.65	848.25	225.65	2968.87	1533.88
1993	721.01	1482.75	848.25	1022.58	2222.41	1074.74	1060.31	1533.88
1994	1017.89	255.65	848.25	511.29	-	-	2544.75	1661.69
1995	-	1022.58	848.25	511.29	169.65	664.68	-	-
1996	169.65	1406.05	424.15	-	296.89	715.81	1102.72	1661.69
1997	-	345.12	763.42	-	1874.63	1763.96	-	-
1998	424.12	-	-	-	424.12	-	-	-
1999	1015.58	-	-	-	1222.30	-	-	-
2000	-	-	-	-	1335.50	-	-	-
2001	1097.94	-	-	-	1655.65	-	-	-
	France		**Greece**		**Ireland**		**Italy**	
	US$	DM	US$	DM	US$	DM	US$	DM
1991	-	-	-	-	339.29	-	1696.50	-
1992	-	-	296.89	-	254.48	255.65	709.88	-
1993	-	-	678.59	511.29	424.12	766.94	7048.94	2556.46
1994	-	66.47	593.77	511.29	-	-	1272.37	639.11
1995	169.65	-	-	434.60	-	-	1696.49	-
1996	-	-	602.26	1083.94	-	-	4035.69	-
1997	-	-	-	1022.58	-	-	1662.57	-
1998	-	-	1654.08	383.47	-	-	3180.93	-
1999	-	-	-	-	-	-	862.81	-
2000	-	-	-	-	-	-	5357.43	-
2001	-	-	-	-	-	-	11524.80	-
	Portugal		**Spain**		**Sweden**		**UK**	
	US$	DM	US$	DM	US$	DM	US$	DM
1991	-	-		-	-	-	-	-
1992	-	-	1272.37	1022.58	1972.18	1278.23	2544.75	2556.46
1993	848.25	-	402.92	2249.68	4775.64	-	-	-
1994	-	1278.23	347.78	1278.23	5394.86	146.49	-	-
1995	-	-	309.61	-	2438.71	1789.52	-	-
1996	55.14	766.94	-	1022.58	1017.90	1406.05	3392.99	-
1997	212.06	-	157.77	-	2527.78	230.08	-	-
1998	-	-	1442.02	-	212.06	-	-	-
1999	990.89	-	1109.58	-	-	-	-	-
2000	-	-	1580.28	-	-	-	-	-
2001	-	-	1167.13	-	-	-	-	-

Table A2: Amount of DM and US$ Denominated Bond Issues in Million Euro

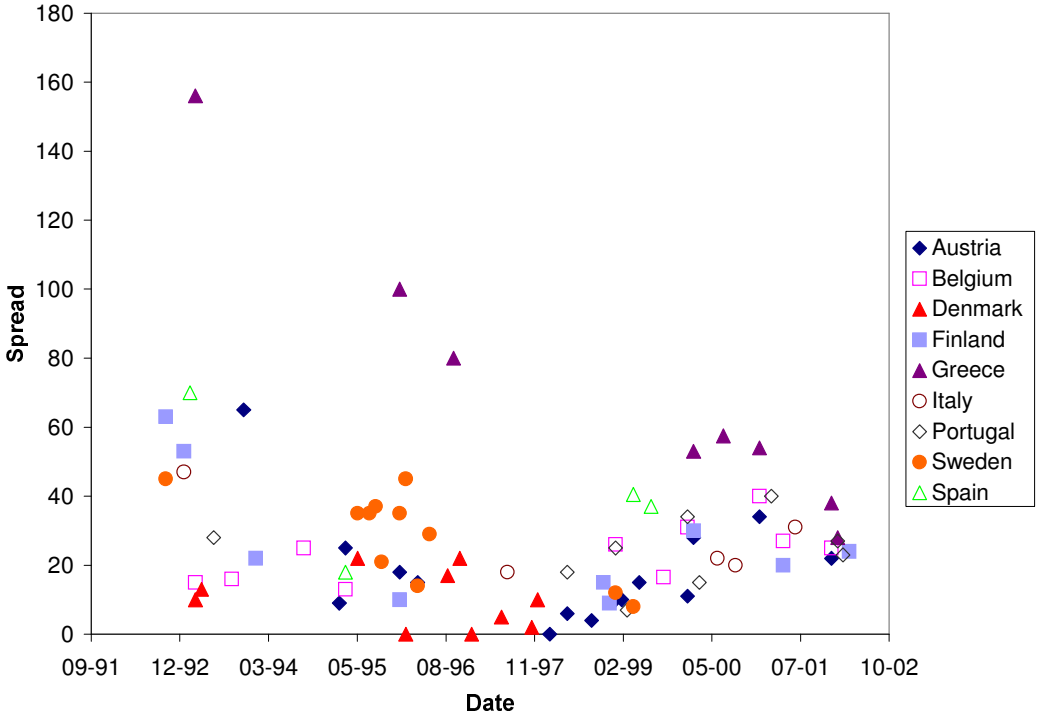

Figure A1: DM/Euro Bond Yield Spreads between 1992-2002

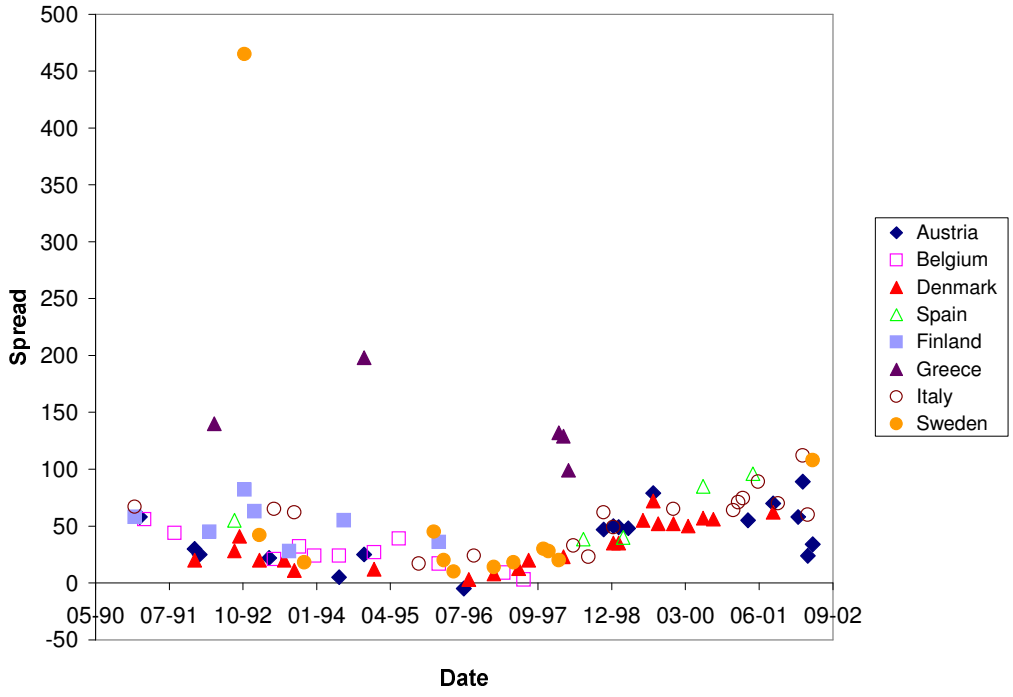

Figure A2: US$ Bond Yield Spreads between 1992-2002

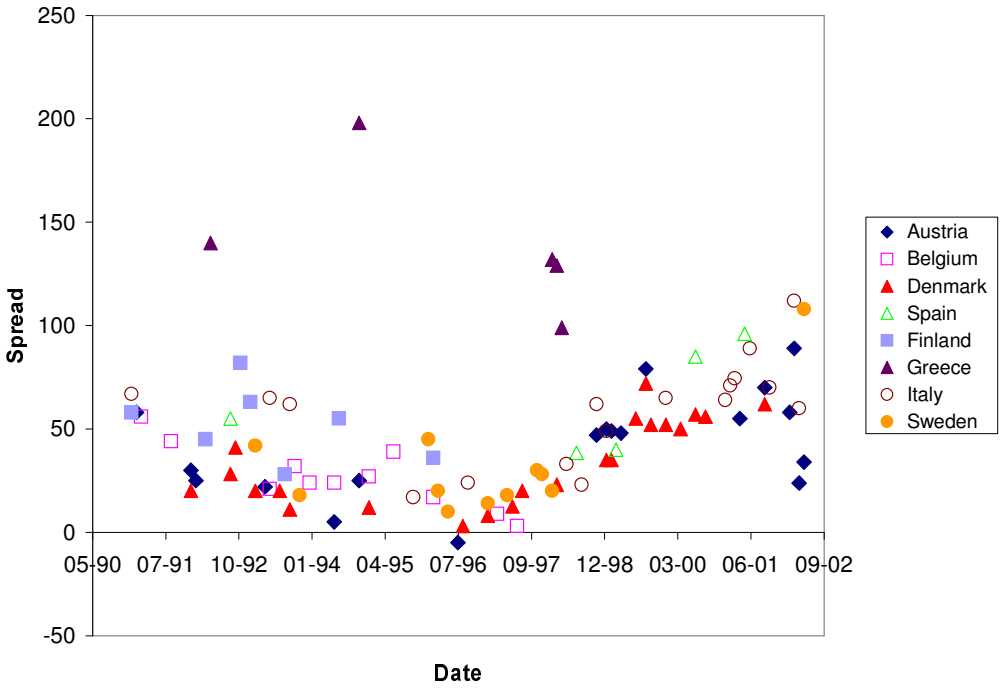

Figure A3: US$ Bond Yield Spreads between 1992-2002 without Swedish Outlier

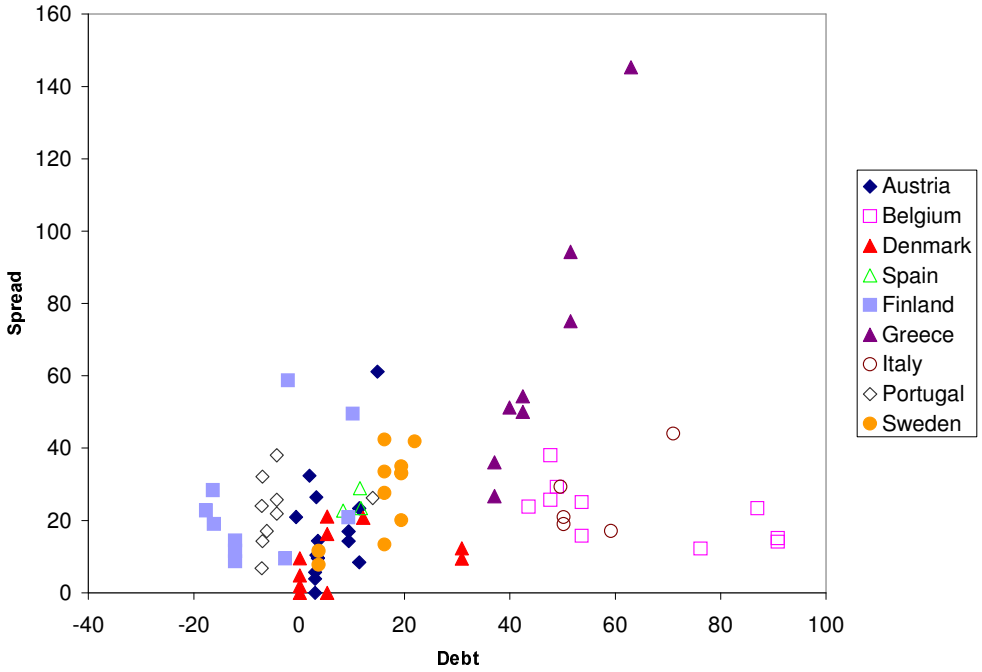

Figure A4: DM/Euro Bond Yield Spread in Relation to Debt/GDP Differential, 1991-2002

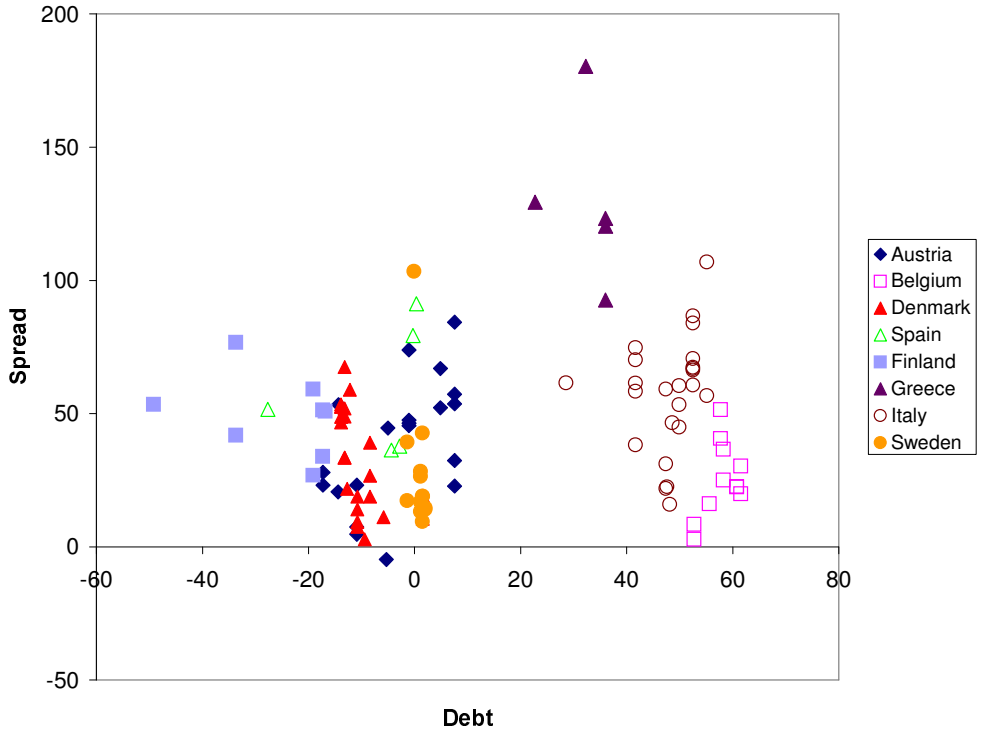

Figure A5: US$ Bond Yield Spread in Relation to Debt/GDP Differential, 1991-2002

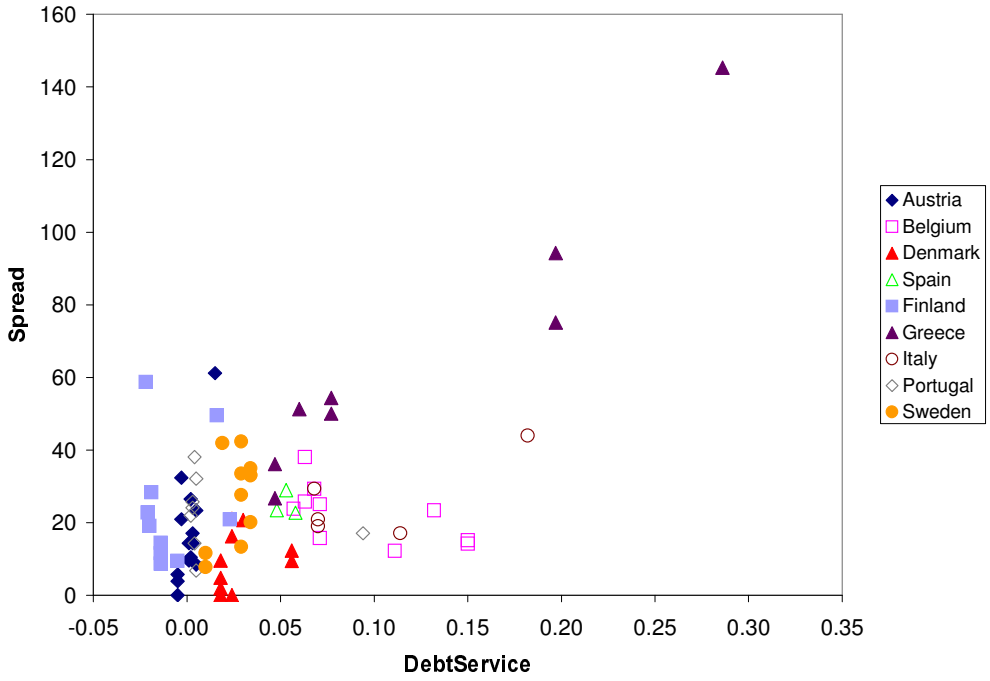

Figure A6: DM/Euro Bond Yield Spread in Relation to Debt Service/ Revenue Differential, 1991-2002

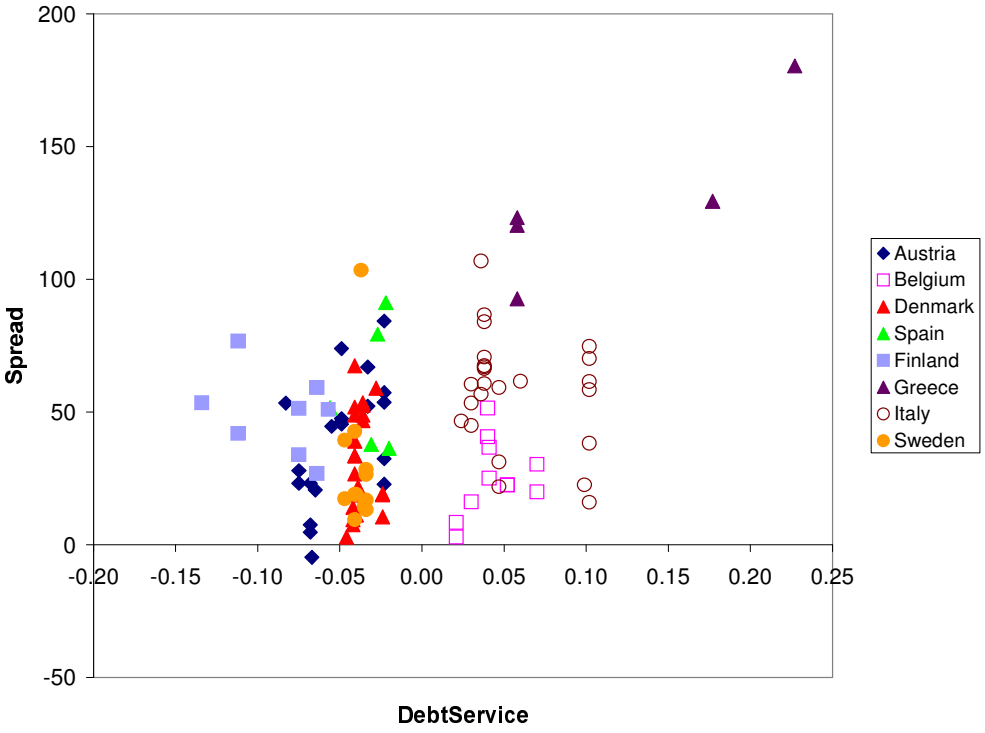

Figure A7: US$ Bond Yield Spread in Relation to Debt Service/Revenue Differential

2008

B01-08	**Euro-Diplomatie durch gemeinsame „Wirtschaftsregierung“**	*Martin Seidel*

2007

B03-07	**Löhne und Steuern im Systemwettbewerb der Mitgliedstaaten der Europäischen Union**	*Martin Seidel*
B02-07	**Konsolidierung und Reform der Europäischen Union**	*Martin Seidel*
B01-07	**The Ratification of European Treaties - Legal and Constitutional Basis of a European Referendum.**	*Martin Seidel*

2006

B03-06	**Financial Frictions, Capital Reallocation, and Aggregate Fluctuations**	*Jürgen von Hagen, Haiping Zhang*
B02-06	**Financial Openness and Macroeconomic Volatility**	*Jürgen von Hagen, Haiping Zhang*
B01-06	**A Welfare Analysis of Capital Account Liberalization**	*Jürgen von Hagen, Haiping Zhang*

2005

B11-05	**Das Kompetenz- und Entscheidungssystem des Vertrages von Rom im Wandel seiner Funktion und Verfassung**	*Martin Seidel*
B10-05	**Die Schutzklauseln der Beitrittsverträge**	*Martin Seidel*
B09-05	**Measuring Tax Burdens in Europe**	*Guntram B. Wolff*
B08-05	**Remittances as Investment in the Absence of Altruism**	*Gabriel González-König*
B07-05	**Economic Integration in a Multicone World?**	*Christian Volpe Martincus, Jennifer Pédussel Wu*
B06-05	**Banking Sector (Under?)Development in Central and Eastern Europe**	*Jürgen von Hagen, Valeriya Dinger*
B05-05	**Regulatory Standards Can Lead to Predation**	*Stefan Lutz*
B04-05	**Währungspolitik als Sozialpolitik**	*Martin Seidel*
B03-05	**Public Education in an Integrated Europe: Studying to Migrate and Teaching to Stay?**	*Panu Poutvaara*
B02-05	**Voice of the Diaspora: An Analysis of Migrant Voting Behavior**	*Jan Fidrmuc, Orla Doyle*
B01-05	**Macroeconomic Adjustment in the New EU Member States**	*Jürgen von Hagen, Iulia Traistaru*

2004

B33-04	**The Effects of Transition and Political Instability On Foreign Direct Investment Inflows: Central Europe and the Balkans**	*Josef C. Brada, Ali M. Kutan, Taner M. Yigit*
B32-04	**The Choice of Exchange Rate Regimes in Developing Countries: A Mulitnominal Panal Analysis**	*Jürgen von Hagen, Jizhong Zhou*
B31-04	**Fear of Floating and Fear of Pegging: An Empirical Anaysis of De Facto Exchange Rate Regimes in Developing Countries**	*Jürgen von Hagen, Jizhong Zhou*
B30-04	**Der Vollzug von Gemeinschaftsrecht über die Mitgliedstaaten und seine Rolle für die EU und den Beitrittsprozess**	*Martin Seidel*
B29-04	**Deutschlands Wirtschaft, seine Schulden und die Unzulänglichkeiten der einheitlichen Geldpolitik im Eurosystem**	*Dieter Spethmann, Otto Steiger*
B28-04	**Fiscal Crises in U.S. Cities: Structural and Non-structural Causes**	*Guntram B. Wolff*
B27-04	**Firm Performance and Privatization in Ukraine**	*Galyna Grygorenko, Stefan Lutz*
B26-04	**Analyzing Trade Opening in Ukraine: Effects of a Customs Union with the EU**	*Oksana Harbuzyuk, Stefan Lutz*
B25-04	**Exchange Rate Risk and Convergence to the Euro**	*Lucjan T. Orlowski*
B24-04	**The Endogeneity of Money and the Eurosystem**	*Otto Steiger*
B23-04	**Which Lender of Last Resort for the Eurosystem?**	*Otto Steiger*
B22-04	**Non-Discretonary Monetary Policy: The Answer for Transition Economies?**	*Elham-Mafi Kreft, Steven F. Kreft*
B21-04	**The Effectiveness of Subsidies Revisited: Accounting for Wage and Employment Effects in Business R+D**	*Volker Reinthaler, Guntram B. Wolff*
B20-04	**Money Market Pressure and the Determinants of Banking Crises**	*Jürgen von Hagen, Tai-kuang Ho*
B19-04	**Die Stellung der Europäischen Zentralbank nach dem Verfassungsvertrag**	*Martin Seidel*

B18-04	**Transmission Channels of Business Cycles Synchronization in an Enlarged EMU**	*Iulia Traistaru*
B17-04	**Foreign Exchange Regime, the Real Exchange Rate and Current Account Sustainability: The Case of Turkey**	*Sübidey Togan, Hasan Ersel*
B16-04	**Does It Matter Where Immigrants Work? Traded Goods, Non-traded Goods, and Sector Specific Employment**	*Harry P. Bowen, Jennifer Pédussel Wu*
B15-04	**Do Economic Integration and Fiscal Competition Help to Explain Local Patterns?**	*Christian Volpe Martincus*
B14-04	**Euro Adoption and Maastricht Criteria: Rules or Discretion?**	*Jiri Jonas*
B13-04	**The Role of Electoral and Party Systems in the Development of Fiscal Institutions in the Central and Eastern European Countries**	*Sami Yläoutinen*
B12-04	**Measuring and Explaining Levels of Regional Economic Integration**	*Jennifer Pédussel Wu*
B11-04	**Economic Integration and Location of Manufacturing Activities: Evidence from MERCOSUR**	*Pablo Sanguinetti, Iulia Traistaru, Christian Volpe Martincus*
B10-04	**Economic Integration and Industry Location in Transition Countries**	*Laura Resmini*
B09-04	**Testing Creditor Moral Hazard in Souvereign Bond Markets: A Unified Theoretical Approach and Empirical Evidence**	*Ayse Y. Evrensel, Ali M. Kutan*
B08-04	**European Integration, Productivity Growth and Real Convergence**	*Taner M. Yigit, Ali M. Kutan*
B07-04	**The Contribution of Income, Social Capital, and Institutions to Human Well-being in Africa**	*Mina Baliamoune-Lutz, Stefan H. Lutz*
B06-04	**Rural Urban Inequality in Africa: A Panel Study of the Effects of Trade Liberalization and Financial Deepening**	*Mina Baliamoune-Lutz, Stefan H. Lutz*
B05-04	**Money Rules for the Eurozone Candidate Countries**	*Lucjan T. Orlowski*
B04-04	**Who is in Favor of Enlargement? Determinants of Support for EU Membership in the Candidate Countries' Referenda**	*Orla Doyle, Jan Fidrmuc*
B03-04	**Over- and Underbidding in Central Bank Open Market Operations Conducted as Fixed Rate Tender**	*Ulrich Bindseil*
B02-04	**Total Factor Productivity and Economic Freedom Implications for EU Enlargement**	*Ronald L. Moomaw, Euy Seok Yang*
B01-04	**Die neuen Schutzklauseln der Artikel 38 und 39 des Beitrittsvertrages: Schutz der alten Mitgliedstaaten vor Störungen durch die neuen Mitgliedstaaten**	*Martin Seidel*
2003		
B29-03	**Macroeconomic Implications of Low Inflation in the Euro Area**	*Jürgen von Hagen, Boris Hofmann*
B28-03	**The Effects of Transition and Political Instability on Foreign Direct Investment: Central Europe and the Balkans**	*Josef C. Brada, Ali M. Kutan, Taner M. Yigit*
B27-03	**The Performance of the Euribor Futures Market: Efficiency and the Impact of ECB Policy Announcements (Electronic Version of International Finance)**	*Kerstin Bernoth, Juergen von Hagen*
B26-03	**Souvereign Risk Premia in the European Government Bond Market (überarbeitete Version zum Herunterladen)**	*Kerstin Bernoth, Juergen von Hagen, Ludger Schulknecht*
B25-03	**How Flexible are Wages in EU Accession Countries?**	*Anna Iara, Iulia Traistaru*
B24-03	**Monetary Policy Reaction Functions: ECB versus Bundesbank**	*Bernd Hayo, Boris Hofmann*
B23-03	**Economic Integration and Manufacturing Concentration Patterns: Evidence from Mercosur**	*Iulia Traistaru, Christian Volpe Martincus*
B22-03	**Reformzwänge innerhalb der EU angesichts der Osterweiterung**	*Martin Seidel*
B21-03	**Reputation Flows: Contractual Disputes and the Channels for Inter-Firm Communication**	*William Pyle*
B20-03	**Urban Primacy, Gigantism, and International Trade: Evidence from Asia and the Americas**	*Ronald L. Moomaw, Mohammed A. Alwosabi*
B19-03	**An Empirical Analysis of Competing Explanations of Urban Primacy Evidence from Asia and the Americas**	*Ronald L. Moomaw, Mohammed A. Alwosabi*

B18-03	**The Effects of Regional and Industry-Wide FDI Spillovers on Export of Ukrainian Firms**	*Stefan H. Lutz, Oleksandr Talavera, Sang-Min Park*
B17-03	**Determinants of Inter-Regional Migration in the Baltic States**	*Mihails Hazans*
B16-03	**South-East Europe: Economic Performance, Perspectives, and Policy Challenges**	*Iulia Traistaru, Jürgen von Hagen*
B15-03	**Employed and Unemployed Search: The Marginal Willingness to Pay for Attributes in Lithuania, the US and the Netherlands**	*Jos van Ommeren, Mihails Hazans*
B14-03	**FCIs and Economic Activity: Some International Evidence**	*Charles Goodhart, Boris Hofmann*
B13-03	**The IS Curve and the Transmission of Monetary Policy: Is there a Puzzle?**	*Charles Goodhart, Boris Hofmann*
B12-03	**What Makes Regions in Eastern Europe Catching Up? The Role of Foreign Investment, Human Resources, and Geography**	*Gabriele Tondl, Goran Vuksic*
B11-03	**Die Weisungs- und Herrschaftsmacht der Europäischen Zentralbank im europäischen System der Zentralbanken - eine rechtliche Analyse**	*Martin Seidel*
B10-03	**Foreign Direct Investment and Perceptions of Vulnerability to Foreign Exchange Crises: Evidence from Transition Economies**	*Josef C. Brada, Vladimír Tomsík*
B09-03	**The European Central Bank and the Eurosystem: An Analysis of the Missing Central Monetary Institution in European Monetary Union**	*Gunnar Heinsohn, Otto Steiger*
B08-03	**The Determination of Capital Controls: Which Role Do Exchange Rate Regimes Play?**	*Jürgen von Hagen, Jizhong Zhou*
B07-03	**Nach Nizza und Stockholm: Stand des Binnenmarktes und Prioritäten für die Zukunft**	*Martin Seidel*
B06-03	**Fiscal Discipline and Growth in Euroland. Experiences with the Stability and Growth Pact**	*Jürgen von Hagen*
B05-03	**Reconsidering the Evidence: Are Eurozone Business Cycles Converging?**	*Michael Massmann, James Mitchell*
B04-03	**Do Ukrainian Firms Benefit from FDI?**	*Stefan H. Lutz, Oleksandr Talavera*
B03-03	**Europäische Steuerkoordination und die Schweiz**	*Stefan H. Lutz*
B02-03	**Commuting in the Baltic States: Patterns, Determinants, and Gains**	*Mihails Hazans*
B01-03	**Die Wirtschafts- und Währungsunion im rechtlichen und politischen Gefüge der Europäischen Union**	*Martin Seidel*
2002		
B30-02	**An Adverse Selection Model of Optimal Unemployment Assurance**	*Marcus Hagedorn, Ashok Kaul, Tim Mennel*
B29B-02	**Trade Agreements as Self-protection**	*Jennifer Pédussel Wu*
B29A-02	**Growth and Business Cycles with Imperfect Credit Markets**	*Debajyoti Chakrabarty*
B28-02	**Inequality, Politics and Economic Growth**	*Debajyoti Chakrabarty*
B27-02	**Poverty Traps and Growth in a Model of Endogenous Time Preference**	*Debajyoti Chakrabarty*
B26-02	**Monetary Convergence and Risk Premiums in the EU Candidate Countries**	*Lucjan T. Orlowski*
B25-02	**Trade Policy: *Institutional* Vs. *Economic* Factors**	*Stefan Lutz*
B24-02	**The Effects of Quotas on Vertical Intra-industry Trade**	*Stefan Lutz*
B23-02	**Legal Aspects of European Economic and Monetary Union**	*Martin Seidel*
B22-02	**Der Staat als *Lender of Last Resort* - oder: Die Achillesverse des Eurosystems**	*Otto Steiger*
B21-02	**Nominal and Real Stochastic Convergence Within the Transition Economies and to the European Union: Evidence from Panel Data**	*Ali M. Kutan, Taner M. Yigit*
B20-02	**The Impact of News, Oil Prices, and International Spillovers on Russian Fincancial Markets**	*Bernd Hayo, Ali M. Kutan*

B19-02	**East Germany: Transition with Unification, Experiments and Experiences**	*Jürgen von Hagen, Rolf R. Strauch, Guntram B. Wolff*
B18-02	**Regional Specialization and Employment Dynamics in Transition Countries**	*Iulia Traistaru, Guntram B. Wolff*
B17-02	**Specialization and Growth Patterns in Border Regions of Accession Countries**	*Laura Resmini*
B16-02	**Regional Specialization and Concentration of Industrial Activity in Accession Countries**	*Iulia Traistaru, Peter Nijkamp, Simonetta Longhi*
B15-02	**Does Broad Money Matter for Interest Rate Policy?**	*Matthias Brückner, Andreas Schaber*
B14-02	**The Long and Short of It: Global Liberalization, Poverty and Inequality**	*Christian E. Weller, Adam Hersch*
B13-02	**De Facto and Official Exchange Rate Regimes in Transition Economies**	*Jürgen von Hagen, Jizhong Zhou*
B12-02	**Argentina: The Anatomy of A Crisis**	*Jiri Jonas*
B11-02	**The Eurosystem and the Art of Central Banking**	*Gunnar Heinsohn, Otto Steiger*
B10-02	**National Origins of European Law: Towards an Autonomous System of European Law?**	*Martin Seidel*
B09-02	**Monetary Policy in the Euro Area - Lessons from the First Years**	*Volker Clausen, Bernd Hayo*
B08-02	**Has the Link Between the Spot and Forward Exchange Rates Broken Down? Evidence From Rolling Cointegration Tests**	*Ali M. Kutan, Su Zhou*
B07-02	**Perspektiven der Erweiterung der Europäischen Union**	*Martin Seidel*
B06-02	**Is There Asymmetry in Forward Exchange Rate Bias? Multi-Country Evidence**	*Su Zhou, Ali M. Kutan*
B05-02	**Real and Monetary Convergence Within the European Union and Between the European Union and Candidate Countries: A Rolling Cointegration Approach**	*Josef C. Brada, Ali M. Kutan, Su Zhou*
B04-02	**Asymmetric Monetary Policy Effects in EMU**	*Volker Clausen, Bernd Hayo*
B03-02	**The Choice of Exchange Rate Regimes: An Empirical Analysis for Transition Economies**	*Jürgen von Hagen, Jizhong Zhou*
B02-02	**The Euro System and the Federal Reserve System Compared: Facts and Challenges**	*Karlheinz Ruckriegel, Franz Seitz*
B01-02	**Does Inflation Targeting Matter?**	*Manfred J. M. Neumann, Jürgen von Hagen*
2001		
B29-01	**Is Kazakhstan Vulnerable to the Dutch Disease?**	*Karlygash Kuralbayeva, Ali M. Kutan, Michael L. Wyzan*
B28-01	**Political Economy of the Nice Treaty: Rebalancing the EU Council. The Future of European Agricultural Policies**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B27-01	**Investor Panic, IMF Actions, and Emerging Stock Market Returns and Volatility: A Panel Investigation**	*Bernd Hayo, Ali M. Kutan*
B26-01	**Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries**	*Konstantinos Drakos, Ali M. Kutan*
B25-01	**Monetary Convergence of the EU Candidates to the Euro: A Theoretical Framework and Policy Implications**	*Lucjan T. Orlowski*
B24-01	**Disintegration and Trade**	*Jarko and Jan Fidrmuc*
B23-01	**Migration and Adjustment to Shocks in Transition Economies**	*Jan Fidrmuc*
B22-01	**Strategic Delegation and International Capital Taxation**	*Matthias Brückner*
B21-01	**Balkan and Mediterranean Candidates for European Union Membership: The Convergence of Their Monetary Policy With That of the Europaen Central Bank**	*Josef C. Brada, Ali M. Kutan*
B20-01	**An Empirical Inquiry of the Efficiency of Intergovernmental Transfers for Water Projects Based on the WRDA Data**	*Anna Rubinchik-Pessach*
B19-01	**Detrending and the Money-Output Link: International Evidence**	*R.W. Hafer, Ali M. Kutan*

B18-01	**Monetary Policy in Unknown Territory. The European Central Bank in the Early Years**	*Jürgen von Hagen, Matthias Brückner*
B17-01	**Executive Authority, the Personal Vote, and Budget Discipline in Latin American and Carribean Countries**	*Mark Hallerberg, Patrick Marier*
B16-01	**Sources of Inflation and Output Fluctuations in Poland and Hungary: Implications for Full Membership in the European Union**	*Selahattin Dibooglu, Ali M. Kutan*
B15-01	**Programs Without Alternative: Public Pensions in the OECD**	*Christian E. Weller*
B14-01	**Formal Fiscal Restraints and Budget Processes As Solutions to a Deficit and Spending Bias in Public Finances - U.S. Experience and Possible Lessons for EMU**	*Rolf R. Strauch, Jürgen von Hagen*
B13-01	**German Public Finances: Recent Experiences and Future Challenges**	*Jürgen von Hagen, Rolf R. Strauch*
B12-01	**The Impact of Eastern Enlargement On EU-Labour Markets. Pensions Reform Between Economic and Political Problems**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B11-01	**Inflationary Performance in a Monetary Union With Large Wage Setters**	*Lilia Cavallar*
B10-01	**Integration of the Baltic States into the EU and Institutions of Fiscal Convergence: A Critical Evaluation of Key Issues and Empirical Evidence**	*Ali M. Kutan, Niina Pautola-Mol*
B09-01	**Democracy in Transition Economies: Grease or Sand in the Wheels of Growth?**	*Jan Fidrmuc*
B08-01	**The Functioning of Economic Policy Coordination**	*Jürgen von Hagen, Susanne Mundschenk*
B07-01	**The Convergence of Monetary Policy Between Candidate Countries and the European Union**	*Josef C. Brada, Ali M. Kutan*
B06-01	**Opposites Attract: The Case of Greek and Turkish Financial Markets**	*Konstantinos Drakos, Ali M. Kutan*
B05-01	**Trade Rules and Global Governance: A Long Term Agenda. The Future of Banking.**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B04-01	**The Determination of Unemployment Benefits**	*Rafael di Tella, Robert J. MacCulloch*
B03-01	**Preferences Over Inflation and Unemployment: Evidence from Surveys of Happiness**	*Rafael di Tella, Robert J. MacCulloch, Andrew J. Oswald*
B02-01	**The Konstanz Seminar on Monetary Theory and Policy at Thirty**	*Michele Fratianni, Jürgen von Hagen*
B01-01	**Divided Boards: Partisanship Through Delegated Monetary Policy**	*Etienne Farvaque, Gael Lagadec*

2000

B20-00	**Breakin-up a Nation, From the Inside**	*Etienne Farvaque*
B19-00	**Income Dynamics and Stability in the Transition Process, general Reflections applied to the Czech Republic**	*Jens Hölscher*
B18-00	**Budget Processes: Theory and Experimental Evidence**	*Karl-Martin Ehrhart, Roy Gardner, Jürgen von Hagen, Claudia Keser*
B17-00	**Rückführung der Landwirtschaftspolitik in die Verantwortung der Mitgliedsstaaten? - Rechts- und Verfassungsfragen des Gemeinschaftsrechts**	*Martin Seidel*
B16-00	**The European Central Bank: Independence and Accountability**	*Christa Randzio-Plath, Tomasso Padoa-Schioppa*
B15-00	**Regional Risk Sharing and Redistribution in the German Federation**	*Jürgen von Hagen, Ralf Hepp*
B14-00	**Sources of Real Exchange Rate Fluctuations in Transition Economies: The Case of Poland and Hungary**	*Selahattin Dibooglu, Ali M. Kutan*
B13-00	**Back to the Future: The Growth Prospects of Transition Economies Reconsidered**	*Nauro F. Campos*

B12-00	**Rechtsetzung und Rechtsangleichung als Folge der Einheitlichen Europäischen Währung**	*Martin Seidel*
B11-00	**A Dynamic Approach to Inflation Targeting in Transition Economies**	*Lucjan T. Orlowski*
B10-00	**The Importance of Domestic Political Institutions: Why and How Belgium Qualified for EMU**	*Marc Hallerberg*
B09-00	**Rational Institutions Yield Hysteresis**	*Rafael Di Tella, Robert MacCulloch*
B08-00	**The Effectiveness of Self-Protection Policies for Safeguarding Emerging Market Economies from Crises**	*Kenneth Kletzer*
B07-00	**Financial Supervision and Policy Coordination in The EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B06-00	**The Demand for Money in Austria**	*Bernd Hayo*
B05-00	**Liberalization, Democracy and Economic Performance during Transition**	*Jan Fidrmuc*
B04-00	**A New Political Culture in The EU - Democratic Accountability of the ECB**	*Christa Randzio-Plath*
B03-00	**Integration, Disintegration and Trade in Europe: Evolution of Trade Relations during the 1990's**	*Jarko Fidrmuc, Jan Fidrmuc*
B02-00	**Inflation Bias and Productivity Shocks in Transition Economies: The Case of the Czech Republic**	*Josef C. Barda, Arthur E. King, Ali M. Kutan*
B01-00	**Monetary Union and Fiscal Federalism**	*Kenneth Kletzer, Jürgen von Hagen*
1999		
B26-99	**Skills, Labour Costs, and Vertically Differentiated Industries: A General Equilibrium Analysis**	*Stefan Lutz, Alessandro Turrini*
B25-99	**Micro and Macro Determinants of Public Support for Market Reforms in Eastern Europe**	*Bernd Hayo*
B24-99	**What Makes a Revolution?**	*Robert MacCulloch*
B23-99	**Informal Family Insurance and the Design of the Welfare State**	*Rafael Di Tella, Robert MacCulloch*
B22-99	**Partisan Social Happiness**	*Rafael Di Tella, Robert MacCulloch*
B21-99	**The End of Moderate Inflation in Three Transition Economies?**	*Josef C. Brada, Ali M. Kutan*
B20-99	**Subnational Government Bailouts in Germany**	*Helmut Seitz*
B19-99	**The Evolution of Monetary Policy in Transition Economies**	*Ali M. Kutan, Josef C. Brada*
B18-99	**Why are Eastern Europe's Banks not failing when everybody else's are?**	*Christian E. Weller, Bernard Morzuch*
B17-99	**Stability of Monetary Unions: Lessons from the Break-Up of Czechoslovakia**	*Jan Fidrmuc, Julius Horvath and Jarko Fidrmuc*
B16-99	**Multinational Banks and Development Finance**	*Christian E.Weller and Mark J. Scher*
B15-99	**Financial Crises after Financial Liberalization: Exceptional Circumstances or Structural Weakness?**	*Christian E. Weller*
B14-99	**Industry Effects of Monetary Policy in Germany**	*Bernd Hayo and Birgit Uhlenbrock*
B13-99	**Fiancial Fragility or What Went Right and What Could Go Wrong in Central European Banking?**	*Christian E. Weller and Jürgen von Hagen*
B12 -99	**Size Distortions of Tests of the Null Hypothesis of Stationarity: Evidence and Implications for Applied Work**	*Mehmet Caner and Lutz Kilian*
B11-99	**Financial Supervision and Policy Coordination in the EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B10-99	**Financial Liberalization, Multinational Banks and Credit Supply: The Case of Poland**	*Christian Weller*
B09-99	**Monetary Policy, Parameter Uncertainty and Optimal Learning**	*Volker Wieland*
B08-99	**The Connection between more Multinational Banks and less Real Credit in Transition Economies**	*Christian Weller*

B07-99	**Comovement and Catch-up in Productivity across Sectors: Evidence from the OECD**	*Christopher M. Cornwell and Jens-Uwe Wächter*
B06-99	**Productivity Convergence and Economic Growth: A Frontier Production Function Approach**	*Christopher M. Cornwell and Jens-Uwe Wächter*
B05-99	**Tumbling Giant: Germany's Experience with the Maastricht Fiscal Criteria**	*Jürgen von Hagen and Rolf Strauch*
B04-99	**The Finance-Investment Link in a Transition Economy: Evidence for Poland from Panel Data**	*Christian Weller*
B03-99	**The Macroeconomics of Happiness**	*Rafael Di Tella, Robert MacCulloch and Andrew J. Oswald*
B02-99	**The Consequences of Labour Market Flexibility: Panel Evidence Based on Survey Data**	*Rafael Di Tella and Robert MacCulloch*
B01-99	**The Excess Volatility of Foreign Exchange Rates: Statistical Puzzle or Theoretical Artifact?**	*Robert B.H. Hauswald*
1998		
B16-98	**Labour Market + Tax Policy in the EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B15-98	**Can Taxing Foreign Competition Harm the Domestic Industry?**	*Stefan Lutz*
B14-98	**Free Trade and Arms Races: Some Thoughts Regarding EU-Russian Trade**	*Rafael Reuveny and John Maxwell*
B13-98	**Fiscal Policy and Intranational Risk-Sharing**	*Jürgen von Hagen*
B12-98	**Price Stability and Monetary Policy Effectiveness when Nominal Interest Rates are Bounded at Zero**	*Athanasios Orphanides and Volker Wieland*
B11A-98	**Die Bewertung der "dauerhaft tragbaren öffentlichen Finanzlage"der EU Mitgliedstaaten beim Übergang zur dritten Stufe der EWWU**	*Rolf Strauch*
B11-98	**Exchange Rate Regimes in the Transition Economies: Case Study of the Czech Republic: 1990-1997**	*Julius Horvath and Jiri Jonas*
B10-98	**Der Wettbewerb der Rechts- und politischen Systeme in der Europäischen Union**	*Martin Seidel*
B09-98	**U.S. Monetary Policy and Monetary Policy and the ESCB**	*Robert L. Hetzel*
B08-98	**Money-Output Granger Causality Revisited: An Empirical Analysis of EU Countries (überarbeitete Version zum Herunterladen)**	*Bernd Hayo*
B07-98	**Designing Voluntary Environmental Agreements in Europe: Some Lessons from the U.S. EPA's 33/50 Program**	*John W. Maxwell*
B06-98	**Monetary Union, Asymmetric Productivity Shocks and Fiscal Insurance: an Analytical Discussion of Welfare Issues**	*Kenneth Kletzer*
B05-98	**Estimating a European Demand for Money (überarbeitete Version zum Herunterladen)**	*Bernd Hayo*
B04-98	**The EMU's Exchange Rate Policy**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B03-98	**Central Bank Policy in a More Perfect Financial System**	*Jürgen von Hagen / Ingo Fender*
B02-98	**Trade with Low-Wage Countries and Wage Inequality**	*Jaleel Ahmad*
B01-98	**Budgeting Institutions for Aggregate Fiscal Discipline**	*Jürgen von Hagen*
1997		
B04-97	**Macroeconomic Stabilization with a Common Currency: Does European Monetary Unification Create a Need for Fiscal Insurance or Federalism?**	*Kenneth Kletzer*
B-03-97	**Liberalising European Markets for Energy and Telecommunications: Some Lessons from the US Electric Utility Industry**	*Tom Lyon / John Mayo*
B02-97	**Employment and EMU**	*Deutsch-Französisches Wirtschaftspolitisches Forum*
B01-97	**A Stability Pact for Europe**	*(a Forum organized by ZEI)*

ISSN 1436 - 6053

Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Walter-Flex-Strasse 3
D-53113 Bonn
Germany

Tel.: +49-228-73-1732
Fax: +49-228-73-1809
www.zei.de