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Evidence on the bank lending channel in Europe

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Abstract

This paper examines evidence for a bank lending channel in Europe. Following the approach suggested by Kishan and Opiela (2000) we use bank balance sheet data to estimate the response of bank lending to changes in monetary policy stance between 1991 and 1999. In particular, we classify banks according to asset size and capital strength to see if these factors have a significant impact on the lending channel. Using a panel data approach we find that across the EMU systems, undercapitalised banks (of any size) tend to respond more to change in policy.

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1. Background

The ultimate goals of policy makers are a stable and low inflation rate and maintaining a level of real activity that is stable around its "potential". To achieve these goals central banks conduct monetary policy by changing the treasury securities rates so as to "lean against the wind", raising rates when inflation is above its target, and lowering them when output falls below its potential. Although, many recent studies confirm that there is a correlation between these rates and output, this fails to identify how exactly the policy impulses are transmitted to and throughout the

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economy. While there is a widespread agreement that banks play a part in the transmission of monetary policy, there is considerable controversy over the precise role that banks play. In recent theoretical and empirical research, interest has been rekindled in the "credit channel" for the transmission of monetary shocks to real output. This line of research stresses that central bank actions affect output, in part by causing shifts in the supply of loans. In contrast, the traditional Keynesian analysis of the transmission mechanism makes no mention of a loan supply shock. Although two versions of the credit channel have been described in the literature the focus of our study is on the "bank lending channel", which relies on the dual nature of banks as holders of reserve-backed deposits and as originators of loans. If a special lending channel exists, changes in the willingness and ability of banks to extend credit may have important consequences on aggregate economic activity.

This paper aims to contribute to the established literature by examining evidence for a bank lending channel in Europe. Following the approach suggested by Kishan and Opiela (2000) we use bank balance sheet data to estimate the response of bank lending to changes in monetary policy stance between 1991 and 1999. In contrast to the earlier European study by de Bondt (1999), we classify banks according to asset size and capital strength to see if these factors have a significant impact on the lending channel. Using a panel data approach we find that across the EMU system, undercapitalised banks (of any size) tend to respond more to changes in policy. There is little evidence to suggest that only small undercapitalised banks are the main conduit of the bank lending channel. These results, however, need to be qualified. When we look at individual country estimates for France, Germany, Italy and Spain only in the latter two countries is their evidence of a bank lending channel. By implication, it seems that the bank lending channel is more prevalent for undercapitalised banks operating in the other smaller EMU countries.

The organisation of this paper is as follows. Section 2 provides a literature review on the empirical evidence of a bank lending channel in the US and Europe. Section 3 outlines our methodological approach and Section 4 the results. The final Section 5 provides the conclusion.

2. Literature review – Empirical evidence on the bank lending channel

During the 1990s various studies have sought to test for the existence of the bank lending channel. These, mainly US, studies have typically investigated the response of bank loan and other asset and deposit categories to changes in monetary policy stance as proxied by changes in the federal funds rate. In addition, theses studies also investigate whether monetary policy has a differential impact for banks of: Different asset size (Kashyap and Stein, 1995); asset size and liquidity (Kashyap and Stein, 1997a); asset size and capital strength (Kishan and Opiela, 2000). All these studies find that a bank lending channel exists and this is mainly transmitted through small banks. The bank lending channel also appears to be strengthened when these small banks are either relatively illiquid or undercapitalised. In short, the evidence strongly suggests that a bank lending channel is present for small balance sheet constrained banks.

Evidence from various European studies is less decisive. Kashyap and Stein (1997) review various indicators that may affect the bank lending channel in Europe. They conclude that the characteristics of the Italian system suggest that it is likely to be sensitive to the bank lending channel, whereas the lending channel is likely to be weak in the United Kingdom. The aforementioned study, however, did not undertake any formal tests of the lending channel.

As far as we are aware de Bondt (1998) was the first to use disaggregated bank data to test for evidence of the lending channel across various European countries. Following a similar approach to Kashyap and Stein (1995, 1997a) he tests whether there exists important differences in the way in which European banks with varying characteristics (in terms of balance sheet size and liquidity) respond to changes in the stance of monetary policy (short-term interest rates) during the 1990–1995 period. de Bondt (1998) uses changes in money market rates (as a proxy for monetary policy stance) in his interactive regression models. [2] Overall, he finds evidence of a bank lending channel in Germany, Belgium and the Netherlands, while in the rest of the countries under study (France, Italy and the United Kingdom) no significant effect is found. However, when the stance of monetary policy is measured by a monetary condition index, the bank lending channel also appears to exist in Italy and France. De Bondt (1999) adopts a different approach by using aggregate bank data to examine the main bank lending channels in the same six European countries. By including security holdings in a vector error correction model as a variable used to detect loan supply effects, he finds evidence that credit constraints due to monetary policy are important in Italy, Germany and France, but not in the United Kingdom, Belgium and Netherlands.

Finally, Favero et al. (1999) use individual bank balance sheet data to investigate the response of banks in France, Germany, Italy and Spain to monetary tightening during 1992. They find no evidence of the bank lending channel in any country although they do find that banks in different countries respond in different ways to protect the supply of loans from the liquidity squeeze. Small banks in Germany, Italy and (to a lesser extent) Spain maintain (or even increase) loan supply by raising new deposits, whereas banks in France use their excess capital to maintain lending levels.

Overall, the evidence of a bank lending channel in Europe is rather inconclusive. This is perhaps to be expected given the different methodologies and time periods adopted in the aforementioned literature. The study by Favero et al. (1999), for example, only examines the response of bank lending in 1992 and therefore does not provide any substantial time series evidence. De Bondt (1998, 1999) also shows that choice of the monetary stance indicators and alternative methodologies can yield noticeably different results. In order to further investigate evidence of a bank lending channel in Europe we aim to follow a similar approach to these recent studies as outlined below.

[2] The regression tests both a bank lending and borrower's balance sheet channels simultaneously.

3. Methodology and data

As we have shown, evidence on the bank lending channel in Europe is limited and contradictory. In order to add to the established literature we adopt an approach similar to Kashyap and Stein (1995), de Bondt (1998) and Kishan and Opiela (2000) to investigate evidence of the bank lending channel in the EMU area. In particular, we examine evidence of the lending channel across the 11 EMU and countries and then investigate the same channel for the four largest banking systems – Germany, France, Italy and Spain between 1991 and 1999.

Using individual bank level data the growth in bank loans is regressed on the current period and lagged values of changes in the relevant countries short-term money market rate, current and lagged growth in bank securities holdings, current and lagged growth in interbank deposits, current and lagged growth in GDP and lagged change in bank lending.

The regression models are estimated using the random effects panel data approach (see Baltagi and Griffin (1988) and Kumbhakar (1993)). [3] These are set out as follows, with index i referring to bank i and t to period t:

$$\begin{aligned}\Delta\mathrm{LOAN}_{it} = {} & \alpha_i + \beta_1\Delta\mathrm{STIR}_{it} + \beta_2\Delta\mathrm{SECU}_{it} + \beta_3\Delta\mathrm{INTE}_{it} + \beta_4\Delta\mathrm{GDPR}_{it} \\ & + \beta_5\Delta\mathrm{STIR}(1)_{it} + \beta_6\Delta\mathrm{SECU}(1)_{it} + \beta_7\Delta\mathrm{INTE}(1)_{it} \\ & + \beta_8\Delta\mathrm{GDPR}(1)_{it} + \beta_9\Delta\mathrm{LOAN}(1)_{it} + u_i, \end{aligned} \tag{1}$$

$$\begin{aligned}\Delta\mathrm{SECU}_{it} = {} & \alpha_i + \beta_1\Delta\mathrm{STIR}_{it} + \beta_2\Delta\mathrm{INTE}_{it} + \beta_3\Delta\mathrm{GDPR}_{it} + \beta_4\Delta\mathrm{STIR}(1)_{it} \\ & + \beta_5\Delta\mathrm{INTE}(1)_{it} + \beta_6\Delta\mathrm{GDPR}(1)_{it} + \beta_7\Delta\mathrm{SECU}(1)_{it} + u_i, \end{aligned} \tag{2}$$

$$\begin{aligned}\Delta\mathrm{DEPO}_{it} = {} & \alpha_i + \beta_1\Delta\mathrm{STIR}_{it} + \beta_2\Delta\mathrm{INTE}_{it} + \beta_3\Delta\mathrm{GDPR}_{it} + \beta_4\Delta\mathrm{STIR}(1)_{it} \\ & + \beta_5\Delta\mathrm{INTE}(1)_{it} + \beta_6\Delta\mathrm{GDPR}(1)_{it} + \beta_7\Delta\mathrm{DEPO}(1)_{it} + u_i, \end{aligned} \tag{3}$$

$$\Delta\mathrm{INTE}_{it} = \alpha_i + \beta_1\Delta\mathrm{STIR}_{it} + \beta_2\Delta\mathrm{STIR}(1)_{it} + \beta_3\Delta\mathrm{INTE}(1)_{it} + u_i, \tag{4}$$

where $\Delta\mathrm{LOAN}_{it}$ is change in total loans; [4] $\Delta\mathrm{SECU}_{it}$ is change in total securities holdings; $\Delta\mathrm{DEPO}_{it}$ is change in total deposits; $\Delta\mathrm{INTE}_{it}$ is change in interbank borrowings; $\Delta\mathrm{STIR}_{it}$ is change in nominal short-term interest rates; $\Delta\mathrm{GDPR}_{it}$ is change in growth rate of gross domestic product. $\Delta\mathrm{LOAN}(1)_{it}$ is one-period lag of change in total loans; $\Delta\mathrm{SECU}(1)_{it}$ is lag of change in total securities holdings; $\Delta\mathrm{DEPO}(1)_{it}$ is the first lag of change in total deposits; $\Delta\mathrm{INTE}(1)_{it}$ is lag of change in

[3] In order to adopt the appropriate panel estimator we used the Breusch and Pagan LM test statistic to compare random effects with standard regression and the Hausman test to compare the random effects with the fixed effects model. In all the estimations outlined in our paper the random effects was the preferred model. Given the unbalanced nature of the data set in various cases the time series was not long enough for us to use dynamic panel models.

[4] Kishan and Opiela (2000) test a similar model for different types of loans, C & I loans, consumer loans and real estate loans. Data availability restricts our study to total loans.

interbank borrowings; $\Delta\mathrm{STIR}(1)_{it}$ is lag of change in nominal short-term interest rates; $\Delta\mathrm{GDPR}(1)_{it}$ is lag of change in growth rate of gross domestic product.

While there is no consensus as to the best indicator of monetary policy stance most studies use short-term market interest rates, such as the federal funds rate or treasury bill rate, to measure policy action. some use policy stance indicators (like the Bernanke–Mihov indicator used in Kishan and Opiela (2000)). Overall, we choose to adopt changes in short-term money market rates as the indicator of monetary policy stance (as advocated by Bernanke and Blinder, 1992). Securities and interbank deposits [5] are included to control for any funding effects on loans and the GDP variables are included to control for demand factors – bearing in mind that tests of the bank lending channel aim to identify only supply side effects. At first glance it may seem strange that we include a number of one-period lagged variables. We include these for two reasons. First because it distinguishes between contemporaneous and lagged responses. Second, the bank balance sheet data is only available on an annual basis. This contrasts with the US where quarterly returns can be obtained from the call reports (see Kishan and Opiela, 2000). As such we can only identify changes in lending and funding behaviour on an annual basis. Given that bank's balance sheet structure may respond to changes in the stance of monetary policy in less than a year we believed it best to include both current and one-period (one year) lags in order to be able to identify the relevant portfolio adjustments.

The individual bank balance sheet data for all the 11 EMU systems for 1991–1999 was obtained from BankScope, a database maintained by International Bank Credit Analysis Ltd. (IBCA) and the Brussels-based Bureau van Dijk. Favero et al. (1999) pointed out that microeconomic data allow one to identify the presence of a credit channel by testing the specific empirical implication of the credit view: Namely that the responses of banks to a shift in monetary policy should differ depending on their characteristics. The data on growth rate of gross domestic product and short-term interest rates are obtained from the EC's Eurostat. Table 1 provides the number of observations in the 11 EMU countries according to year, bank size and the capital strength. This shows that the sample size varies across the 11 EMU countries. The descriptive statistics of the bank balance sheet items are shown in the appendix.

It has been argued by Favero et al. (1999) and Kishan and Opiela (2000) that categorising banks by size and capital adequacy will highlight loan supply shifts given a change in monetary policy. To analyse the cross-sectional differences in bank financing and lending decisions, our sample of banks are first categorised into six asset size categories and further subdivided into three capital strength groups. Though regulators use a variety of definitions of bank capital, (and since BIS risk-adjusted ratios were only available for a small sample of banks in our database) we focus on the equity capital to total asset ratio (Benston, 1999; Estrella et al., 1999). This includes banks with equity to assets ratios $<5\%$ (undercapitalised), $>5\%$ and $<10\%$

[5] US studies tend to include time deposits, which are free from reserve requirements, in their model specification. Given that our bank sample does not provide a uniform definition of time deposits we use interbank deposits (borrowings) as a proxy.

Table 1
The number of observations in the sample – years, bank sizes (in ECU million) and capital strength

EMU countries	1991	1992	1993	1994	1995	1996	1997	1998	1999
Austria	14	25	25	25	25	25	25	22	2
Belgium	22	37	39	39	39	39	39	32	5
Finland	4	7	9	9	9	9	9	8	5
France	117	301	308	308	308	308	308	298	59
Germany	185	510	535	536	536	536	536	518	78
Ireland	6	13	16	16	16	16	16	13	7
Italy	108	133	135	135	135	135	135	127	9
Luxembourg	51	83	85	85	85	85	85	83	17
Netherlands	18	34	36	36	36	36	36	33	11
Portugal	13	34	35	35	35	35	35	33	9
Spain	11	91	100	100	100	100	100	97	89

	0–249.9	250–499.9	500–999.9	1000–1999.9	2000–4999.9	5000+
Austria	49	52	43	32	12	
Belgium	75	35	43	32	18	88
Finland		4	12	14	4	35
France	404	274	337	331	503	466
Germany	765	630	657	777	560	581
Ireland	4	4	6	38	41	26
Italy	72	110	234	232	163	241
Luxembourg	94	94	113	96	113	149
Netherlands	21	30	38	34	75	78
Portugal	26	34	33	50	42	79
Spain	147	77	88	90	126	260

	Under	Adequate	Over
Austria	66	95	27
Belgium	159	93	39
Finland	38	28	3
France	967	837	511
Germany	2756	945	269
Ireland	38	65	16
Italy	96	616	340
Luxembourg	459	122	78
Netherlands	114	132	30
Portugal	78	114	72
Spain	123	467	198

(adequately capitalised) and >10% (well/overcapitalised). [6] We then investigate each group's responsiveness in lending to changes in monetary stance (short-term money market rates).

In order to systematically evaluate evidence of the bank lending channel in Europe we start by investigating evidence from pooled data for all the 11 EMU countries. This will help to see whether the bank lending channel is prevalent across EMU

[6] This breakdown is identical to Kishan and Opiela (2000) and similar to Kashyap and Stein (1997a).

countries. Then we investigate evidence of the lending channel for EMU's four largest economies, France, Germany, Italy and Spain, separately. [7] First, we examine the responsive of total loans, securities, total deposits and interbank borrowings to changes in the short-term money market using our full pooled sample. We then investigate the bank lending channel using the pooled estimates according to the six asset size categories and the responsive of interbank funding to changes in policy stance. The latter is to see how the funding characteristics of different sizes of banks responds to policy changes. This is in line with the tests performed by Kishan and Opiela (2000) who test the responsiveness of time deposits to rate changes. Second, we report the individual country estimates. Third we analyse estimates of the lending channel according to bank size and capital strength. Here we have to reduce the number of asset size categories to three because of the low level of observations that occur in various categories. Finally we report tests for individual countries based on the three assets and capital strength breakdown.

4. Results

Table 2 illustrates the responsiveness of total loans (LOAN), total securities (SECU), total deposits (DEPO) and interbank borrowings (INTE) to changes in monetary stance across 11 EMU countries between 1991 and 1999. [8] It can be seen from the LOAN equation that bank lending does appear to be statistically significantly related to changes in the lagged (but not contemporaneous) stance of monetary policy. The same estimates also reveal that there is a positive relationship between total lending and total securities and interbank borrowings. Overall, this suggests that banks adjust their interbank borrowings and securities holdings as loan supply changes. The three remaining models that look at changes in total securities, total deposits and interbank borrowings also confirm that these balance sheet items are all significantly influenced by contemporaneous changes in money market rates. Total securities respond positively to current and lagged period change in policy, total deposits also respond positively to current policy. Interbank borrowings respond negatively to changes in market rates. Overall these results suggest that both the assets and deposits features of European banks changes in response to monetary policy stance. While these results are suggestive of a bank lending channel adjustments to both the funding structure and securities portfolios are also occurring that may weaken its effect.

[7] Due to the limited (bank) sample size for other EMU countries it was not possible to test for lending channel evidence according to capital strength or asset size.

[8] Diagnostic statistics for Tables 2–9 are available from the authors on request. In general, there is little evidence of multicollinearity as correlation coefficients among the independent variables rarely exceed 0.4. We also examine the variance inflation factor (VIF) to detect the multicollinearity among the explanatory variables as the VIF statistics never exceed two for all cases so that the degree of multicollinearity is not important. In addition, the Durbin–Watson statistic illustrates that first-order autocorrelation is not a problem for any of the estimates.

Table 2
The effect of monetary policy on the growth rate of total loans, total securities, total deposits and total interbank borrowings in EMU countries 1991–1999

	Dependent variables			
	ΔLOAN	ΔSECU	ΔDEPO	ΔINTE
ΔSTIR	−0.0073	0.1235***	0.0721***	−0.1263***
	(0.0292)	(0.0310)	(0.0223)	(0.0384)
ΔSECU	0.0601*			
	(0.0113)			
ΔINTE	0.2134*	0.2223*	0.2695*	
	(0.0076)	(0.0077)	(0.0055)	
ΔGDPR	−0.0007	−0.0500*	−0.0159**	
	(0.0102)	(0.0108)	(0.0078)	
ΔSECU(1)	0.0521*	−0.1908		
	(0.0113)	(0.0115)		
ΔINTE(1)	0.0640*	0.0632*	0.0659*	−0.1617*
	(0.0083)	(0.0083)	(0.0066)	(0.0121)
ΔGDPR(1)	0.0058	−0.0266*	−0.0110	
	(0.0097)	(0.0103)	(0.0074)	
ΔSTIR(1)	−0.0495***	0.0539**	0.0205	−0.0536
	(0.0257)	(0.0273)	(0.0196)	(0.0394)
ΔLOAN(1)	−0.0381*			
	(0.0113)			
ΔDEPO(1)			−0.0560***	
			(0.0114)	
Intercept	0.0106*	0.0366*	0.0222*	0.0240*
	(0.0036)	(0.0038)	(0.0027)	(0.0055)
R^2 (%)	12.7	13.3	24.7	2.5
N	7310	7313	7314	7317

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. $\Delta LOAN_{it}$ is change in total loans; $\Delta SECU_{it}$ is change in total securities holdings; $\Delta DEPO_{it}$ is change in total deposits; $\Delta INTE_{it}$ is change in interbank borrowings; $\Delta STIR_{it}$ is change in nominal short-term interest rates; $\Delta GDPR_{it}$ is change in growth rate of gross domestic product; $\Delta LOAN(1)_{it}$ is one-period lag of change in total loans; $\Delta SECU(1)_{it}$ is lag of change in total securities holdings; $\Delta DEPO(1)_{it}$ is the first lag of change in total deposits; $\Delta INTE(1)_{it}$ is lag of change in interbank borrowings; $\Delta STIR(1)_{it}$ is lag of change in nominal short-term interest rates; $\Delta GDPR(1)_{it}$ is lag of change in growth rate of gross domestic product.

Table 3 shows the effect of policy on loan growth according to bank asset size. The table reveals that the lending of banks in the ECU500–999.9 million and ECU2000–4999.9 million size categories are responsive to either current or lagged policy change. In addition, interbank borrowings and securities portfolios for banks in the ECU500–999.9 million also change in response to growth in loans. For the bigger banks only securities adjust to loan growth. Table 4 shows that various size categories of banks adjust their interbank borrowings in response to a change in policy – namely that when policy tightens interbank borrowings fall. In particular, the evidence so far suggests that banks in the ECU500–999.9 million size category reduce there interbank funding as a response to a contraction in loan supply. Overall, banks

Table 3
The effect of monetary policy on the growth rate of total loans for different bank asset sizes in EMU countries 1991–1999

	Dependent variable: ΔLOAN = change in total loans					
	0–249.9	250–499.9	500–999.9	1000–1999.9	2000–4999.9	5000+
ΔSTIR	0.0487	0.0087	0.0484	0.0806	−0.1318***	−0.0354
	(0.1003)	(0.0758)	(0.0605)	(0.0581)	(0.0675)	(0.0448)
ΔSECU	0.1197*	−0.0258	−0.0155	0.0185	0.0249	0.1469*
	(0.0297)	(0.0298)	(0.0237)	(0.0239)	(0.0311)	(0.0230)
ΔINTE	0.2646*	0.1785*	0.0746*	0.1947*	0.1768*	0.1569*
	(0.0182)	(0.0194)	(0.0158)	(0.0193)	(0.0230)	(0.0166)
ΔGDPR	0.0111	−0.0139	−0.0127	−0.0431**	0.0484**	−0.0110
	(0.0345)	(0.0258)	(0.0197)	(0.0198)	(0.0234)	(0.0165)
ΔSECU(1)	0.0121	0.0264	0.0434***	0.0624*	0.0531	0.0094
	(0.0307)	(0.0308)	(0.0225)	(0.0219)	(0.0330)	(0.0219)
ΔINTE(1)	0.1320*	0.0872*	0.0300***	0.1000*	0.0292	0.0608*
	(0.0206)	(0.0236)	(0.0160)	(0.0183)	(0.0249)	(0.0161)
ΔGDPR(1)	−0.0002	−0.0147	−0.0201	−0.0192	0.0355	0.0053
	(0.0328)	(0.0250)	(0.0195)	(0.0187)	(0.0234)	(0.0153)
ΔSTIR(1)	0.0180	−0.0498	−0.1065**	0.0216	−0.1033***	−0.0424
	(0.0860)	(0.0658)	(0.0499)	(0.0485)	(0.0574)	(0.0399)
ΔLOAN(1)	−0.1829*	−0.2381*	−0.1842*	−0.2839*	0.0530**	0.0624*
	(0.0314)	(0.0316)	(0.0283)	(0.0237)	(0.0246)	(0.0224)
Intercept	0.0107	0.0122	0.0155***	0.0295*	0.0048	0.0146**
	(0.0140)	(0.0129)	(0.0088)	(0.0101)	(0.0083)	(0.0062)
R^2 (%)	23.2	10.0	2.5	9.5	7.6	14.1
N	1103	995	1124	1288	1251	1552

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

Table 4
The effect of monetary policy on the growth rate of total interbank deposits for different bank asset sizes in EMU countries 1991–1999

	Dependent variable: ΔINTE = change in interbank borrowings					
	0–249.9	250–499.9	500–999.9	1000–1999.9	2000–4999.9	5000+
ΔSTIR	−0.1424	−0.2511*	−0.1507***	−0.2164*	−0.1016	−0.0575
	(0.1307)	(0.1046)	(0.0927)	0.0668	(0.0682)	(0.0605)
ΔINTE(1)	−0.3922*	−0.2511*	−0.2313*	−0.3050*	−0.2561*	−0.1980*
	(0.0298)	(0.0366)	(0.0297)	(0.0246)	(0.0295)	(0.0237)
ΔSTIR(1)	−0.1603	−0.1778	−0.0322	−0.1219***	0.0715	−0.0478
	(0.1369)	(0.1119)	(0.0938)	(0.0684)	(0.0692)	(0.0610)
Intercept	−0.0555**	−0.0056	0.0092	0.0400*	0.0644*	0.0636*
	(0.0259)	(0.0188)	(0.0156)	(0.0132)	(0.0116)	(0.0093)
R^2 (%)	4.6	0.5	1.5	5.5	2.7	3.0
N	1104	995	1127	1289	1459	1552

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

Table 5
The effect of monetary policy on the growth rate of total loans for banks with different capital strength and asset sizes in EMU countries 1991–1999

	Dependent variable: ΔLOAN = change in total loans								
	0–499.9			500–1999.9			2000+		
	Under	Adequate	Over	Under	Adequate	Over	Under	Adequate	Over
ΔSTIR	−0.0897***	0.0423	0.0653	0.0069	0.0550	0.4155*	−0.0935***	−0.0787	−0.0133
	(0.0536)	(0.0623)	(0.1744)	(0.0483)	(0.0711)	(0.1711)	(0.0567)	(0.0492)	(0.1030)
ΔSECU	−0.0715**	−0.0306	0.1186*	−0.0069	0.0200	−0.0232	0.1111*	0.0291	−0.0009
	(0.0305)	(0.0199)	(0.0454)	(0.0231)	(0.0270)	(0.0430)	(0.0316)	(0.0210)	(0.0399)
ΔINTE	0.1300*	0.0508*	0.3160***	0.1718*	0.0957*	0.1159*	0.2190*	0.0910*	0.1153*
	(0.0197)	(0.0142)	(0.0272)	(0.0188)	(0.0172)	(0.0318)	(0.0235)	(0.0147)	(0.0293)
ΔGDPR	0.0077	−0.0184	0.0553	−0.0369*	−0.0196	−0.0958***	0.0127	0.0398**	−0.0338
	(0.0176)	(0.0211)	(0.0612)	(0.0156)	(0.0247)	(0.0573)	(0.0190)	(0.0194)	(0.0346)
ΔSECU(1)	−0.0420	−0.0043	0.0430	0.0246	0.0961*	0.0374	0.0118	0.0017	0.0019
	(0.0338)	(0.0218)	(0.0459)	(0.0209)	(0.0239)	(0.0513)	(0.0308)	(0.0210)	(0.0377)
ΔINTE(1)	0.0264	0.0267***	0.1559*	0.0896*	0.0638*	−0.0083	0.0866*	0.0295***	−0.0139
	(0.0195)	(0.0157)	(0.0318)	(0.0185)	(0.0175)	(0.0332)	(0.0227)	(0.0154)	(0.0321)
ΔGDPR(1)	−0.0007	−0.0104	0.0161	−0.0302**	−0.0019	−0.0679	0.0064	0.0331***	0.0168
	(0.0160)	(0.0198)	(0.0635)	(0.0146)	(0.0244)	(0.0633)	(0.0182)	(0.0188)	(0.0385)
ΔSTIR(1)	−0.0112	0.0589	0.0002	−0.0968**	0.0539	−0.0691	−0.0419	−0.0507	−0.1157***
	(0.0507)	(0.0534)	(0.1403)	(0.0444)	(0.0551)	(0.1238)	(0.0513)	(0.0393)	(0.0651)
ΔLOAN(1)	−0.0476	−0.1792*	−0.2304*	−0.1502*	−0.3378*	−0.3624*	0.0494**	0.0356	−0.1646
	(0.0439)	(0.0276)	(0.0414)	(0.0240)	(0.0248)	(0.0638)	(0.0222)	(0.0247)	(0.1085)
Intercept	0.0228**	0.0367*	−0.0065	0.0082	0.0362*	0.0374***	0.0065	0.0207*	0.0012
	(0.0106)	(0.0108)	(0.0250)	(0.0086)	(0.0115)	(0.0192)	(0.0073)	(0.0073)	(0.0193)
R^2 (%)	13.4	5.5	25.0	9.4	3.8	13.9	11.3	8.0	5.6
N	663	749	683	1150	930	332	1694	951	158

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

Table 6
The effect of monetary policy on the growth rate of total loans for banks with different capital strength and asset sizes in France, 1991–1999

	Dependent variable: ΔLOAN = change in total loans								
	0–499.9			500–1999.9			2000+		
	Under	Adequate	Over	Under	Adequate	Over	Under	Adequate	Over
ΔSTIR	0.0513	−0.1700	0.0892	−0.0849	−0.0291	0.2374	−0.2098	0.0071	0.2239
	(0.1219)	(0.1919)	(0.3195)	(0.2521)	(0.1278)	(0.5189)	(0.2242)	(0.0468)	(0.2021)
ΔSECU	−0.0357	0.0222	−0.0893	0.0084	0.0112	−0.1094	0.1803***	0.0239	−0.0439
	(0.0297)	(0.0321)	(0.0569)	(0.0450)	(0.0398)	(0.0911)	(0.1097)	(0.0223)	(0.0758)
ΔINTE	0.0574**	0.0504	0.3631*	0.3453*	0.1441*	0.1358*	0.4372*	0.0965*	0.3606*
	(0.0276)	(0.0314)	(0.0349)	(0.0693)	(0.0290)	(0.0530)	(0.0741)	(0.0178)	(0.0861)
ΔGDPR	0.0438	−0.0743	0.1210	−0.1643**	0.0923**	0.3555***	0.0093	0.0001	−0.0465
	(0.0380)	(0.0626)	(0.1144)	(0.0808)	(0.0459)	(0.2051)	(0.0767)	(0.0171)	(0.0684)
ΔSECU(1)	−0.0327	0.0435	−0.0995***	0.0251	0.0274	0.1110	−0.0047	−0.0026	−0.0248
	(0.0363)	(0.0379)	(0.0543)	(0.0428)	(0.0357)	(0.1248)	(0.0903)	(0.0242)	(0.0934)
ΔINTE(1)	−0.0041	0.0197	0.2117*	0.1657*	0.0947*	0.0118	0.0879	0.0266	0.1413**
	(0.0253)	(0.0408)	(0.0457)	(0.0640)	(0.0248)	(0.0613)	(0.0667)	(0.0192)	(0.0722)
ΔGDPR(1)	0.0238	−0.0385	0.0674	−0.0624	0.0646	−0.1755	−0.0118	−0.0035	−0.0631
	(0.0439)	(0.0737)	(0.1266)	(0.0928)	(0.0514)	(0.2172)	(0.0868)	(0.0184)	(0.0804)
ΔSTIR(1)	0.1926***	−0.1583	0.0797	−0.2458	0.1024	−0.5092	−0.1975	0.0365	−0.0860
	(0.0993)	(0.1416)	(0.2373)	(0.1883)	(0.0917)	(0.3718)	(0.1690)	(0.0340)	(0.1433)
ΔLOAN(1)	0.0595	−0.3223*	−0.3096*	−0.1098	0.0226	−0.7361*	0.0210	0.0470	−0.0295
	(0.0974)	(0.0680)	(0.0698)	(0.1401)	(0.0503)	(0.1341)	(0.0430)	(0.0781)	(0.1693)
Intercept	0.0277	−0.0127	0.0030	−0.0263	−0.0070	−0.0481	−0.0205	0.0338*	0.0219
	(0.0223)	(0.0279)	(0.0440)	(0.0370)	(0.0254)	(0.0742)	(0.0299)	(0.0119)	(0.0270)
R^2 (%)	14.6	11.8	36.5	20.8	15.4	48.1	19.8	26.6	49.0
N	99	146	251	186	209	78	398	269	58

Note: ∗, ∗∗ and ∗∗∗ indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

Table 7
The effect of monetary policy on the growth rate of total loans for banks with different capital strength and asset size in Germany, 1991–1999

	Dependent variable: ΔLOAN = change in total loans								
	0–499.9			500–1999.9			2000+		
	Under	Adequate	Over	Under	Adequate	Over	Under	Adequate	Over
ΔSTIR	−0.1090*	0.0057	−0.1655	−0.0526	0.0542	0.9604	−0.1072	−0.2439	−0.1395
	(0.0417)	(0.0592)	(0.3986)	(0.0331)	(0.2504)	(0.6073)	(0.0796)	(0.1866)	(0.0920)
ΔSECU	0.0037	0.0085	0.4423*	−0.2746*	−0.0180	0.3415	0.1211*	0.0010	−0.0220
	(0.0306)	(0.0213)	(0.1233)	(0.0380)	(0.0817)	(0.3095)	(0.0414)	(0.0377)	(0.0475)
ΔINTE	0.0771*	0.1325*	0.5672*	0.1593*	0.3180*	0.1510	0.2113*	0.2841*	0.1146***
	(0.0189)	(0.0147)	(0.0842)	(0.0191)	(0.0902)	(0.1784)	(0.0306)	(0.0852)	(0.0600)
ΔGDPR	0.0203***	0.0018	0.1907***	−0.0157***	−0.0702	−0.0089	−0.0139	0.0613	0.0090
	(0.0124)	(0.0176)	(0.1126)	(0.0095)	(0.0697)	(0.1378)	(0.0223)	(0.0527)	(0.0343)
ΔSECU(1)	−0.0586***	0.0041	0.2711	−0.0531	0.1377**	0.4534	0.0244	−0.0026	0.0342
	(0.0305)	(0.0224)	(0.1798)	(0.0379)	(0.0656)	(0.5289)	(0.0398)	(0.0365)	(0.0452)
ΔINTE(1)	0.0132	0.0197	0.1144	0.0195	0.3722*	0.0519	0.0437	0.0479	−0.0672
	(0.0189)	(0.0163)	(0.1322)	(0.0156)	(0.0969)	(0.1503)	(0.0321)	(0.0641)	(0.0900)
ΔGDPR(1)	0.0056	0.0018	0.0813	−0.0124	−0.0194	−0.0794	0.0243	0.0214	0.0064
	(0.0101)	(0.0140)	(0.0942)	(0.0077)	(0.0571)	(0.1353)	(0.0189)	(0.0412)	(0.0270)
ΔSTIR(1)	−0.0304	−0.0872	0.0388	−0.0083	0.0821	−0.5988	0.0106	0.2325	−0.0021
	(0.0423)	(0.0570)	(0.3949)	(0.0306)	(0.2261)	(0.5741)	(0.0703)	(0.1638)	(0.1024)
ΔLOAN(1)	0.1410*	−0.0787***	−0.1644**	−0.1747*	−0.1696*	−0.7222*	0.0738**	−0.0244	0.2873***
	(0.0443)	(0.0481)	(0.0838)	(0.0174)	(0.0527)	(0.2785)	(0.0359)	(0.0436)	(0.1658)
Intercept	0.0134*	0.0158*	0.0141	0.0249*	0.0187	−0.0200	0.0100	0.0093	0.0046
	(0.0047)	(0.0059)	(0.0475)	(0.0056)	(0.0251)	(0.0681)	(0.0079)	(0.0237)	(0.0119)
R^2 (%)	11.1	21.2	48.8	17.4	15.0	25.0	13.3	19.5	71.9
N	468	352	153	738	267	28	756	113	15

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

Table 8
The effect of monetary policy on the growth rate of total loans for banks with different capital strength and asset sizes in Italy, 1991–1999

	Dependent variable: ΔLOAN = change in total loans								
	0–499.9			500–1999.9			2000+		
	Under	Adequate	Over	Under	Adequate	Over	Under	Adequate	Over
ΔSTIR		0.4511	0.1422		−0.1625	−0.1130		0.0362	−0.3385
		(0.3844)	(0.6196)		(0.1069)	(0.1263)		(0.1702)	(0.3062)
ΔSECU		−0.2311**	0.2839		−0.0332	0.0049		0.0525	0.2682*
		(0.1150)	(0.1871)		(0.0212)	(0.0166)		(0.0473)	(0.1044)
ΔINTE		0.2541*	0.2956*		0.0738*	0.0655*		0.0992*	0.0670
		(0.0543)	(0.0744)		(0.0145)	(0.0218)		(0.0312)	(0.0587)
ΔGDPR		−0.0124	0.1332		−0.0238	−0.0528		−0.0950***	−0.0958
		(0.1024)	(0.1700)		(0.0296)	(0.0328)		(0.0580)	(0.0787)
ΔSECU(1)		−0.0687	−0.0953		−0.0290	−0.0136		−0.0515	0.0688
		(0.0972)	(0.1778)		(0.0196)	(0.0192)		(0.0479)	(0.1020)
ΔINTE(1)		0.0501	0.0912		0.0447*	0.0143		0.0128	0.0049
		(0.0553)	(0.0768)		(0.0166)	(0.0202)		(0.0360)	(0.0599)
ΔGDPR(1)		−0.0990	0.0311		0.0697***	0.0924**		0.0375	0.1769
		(0.1422)	(0.2050)		(0.0385)	(0.0470)		(0.0596)	(0.1216)
ΔSTIR(1)		0.1172	0.2668		−0.1288**	−0.1760*		−0.3077*	−0.4328*
		(0.2428)	(0.3915)		(0.0615)	(0.0677)		(0.1027)	(0.1791)
ΔLOAN(1)		−0.6276*	0.1806		−0.3493*	−0.2969*		0.0521	−0.1165
		(0.0665)	(0.1281)		(0.0322)	(0.0805)		(0.0782)	(0.2260)
Intercept		0.1193*	0.0124		0.0328*	0.0241**		0.0132	0.0016
		(0.0311)	(0.0431)		(0.0094)	(0.0110)		(0.0135)	(0.0250)
R^2 (%)		90.2	55.5		51.7	13.5		11.3	54.5
N		49	65		195	151		204	41

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

Table 9
The effect of monetary policy on the growth rate of total loans for banks with different capital strength and asset sizes in Spain, 1991–1999

	Dependent variable: ΔLOAN = change in total loans								
	0–499.9			500–1999.9			2000+		
	Under	Adequate	Over	Under	Adequate	Over	Under	Adequate	Over
ΔSTIR		−0.4677	−0.8625		−0.0531	0.8410	−0.9068*	−0.0550	−0.2527
		(0.4421)	(1.0293)		(0.3683)	(1.0605)	(0.3564)	(0.0909)	(0.4314)
ΔSECU		−0.1999	0.2018		−0.0057	0.6265	−0.0228	0.0159	0.0609
		(0.1304)	(0.1541)		(0.0798)	(0.4425)	(0.0796)	(0.0335)	(0.0657)
ΔINTE		−0.0639	0.2292*		−0.0221	−0.2031	0.1934**	0.0008	0.0626
		(0.0521)	(0.0835)		(0.0254)	(0.1777)	(0.0831)	(0.0103)	(0.0428)
ΔGDPR		0.1033	0.4921		−0.2797	−0.5546	0.0357	−0.0214	−0.0104
		(0.1955)	(0.4017)		(0.1833)	(0.5240)	(0.1272)	(0.0405)	(0.2212)
ΔSECU(1)		0.0165	0.0891		0.2415*	−0.8809*	−0.0415	0.0067	0.0170
		(0.1144)	(0.1620)		(0.0956)	(0.3625)	(0.0935)	(0.0355)	(0.0668)
ΔINTE(1)		0.0246	0.0965		−0.0956*	0.1105	0.0705	−0.0011	0.0103
		(0.0582)	(0.1024)		(0.0263)	(0.1229)	(0.0893)	(0.0101)	(0.0531)
ΔGDPR(1)		0.2549	0.5519		−0.1339	−0.7394	0.1669	−0.0188	0.0944
		(0.2078)	(0.4529)		(0.1820)	(0.5135)	(0.1367)	(0.0428)	(0.2137)
ΔSTIR(1)		−0.0233	0.9651		−0.4729*	−0.0669	−0.1377	−0.0753***	−0.0500
		(0.2542)	(0.6342)		(0.1497)	(0.4367)	(0.2504)	(0.0455)	(0.1658)
ΔLOAN(1)		−0.0616	−0.0753		0.0355	−0.7672***	0.0799	0.3706*	0.0378
		(0.1020)	(0.1123)		(0.1257)	(0.4210)	(0.1455)	(0.0716)	(0.2012)
Intercept		0.0195	0.0013		0.0249	0.1712	−0.0297	0.0242*	0.0031
		(0.0523)	(0.1151)		(0.0393)	(0.1062)	(0.0403)	(0.0108)	(0.0475)
R^2 (%)		14.4	14.5		23.0	56.4	32.6	21.9	25.2
N		60	95		92	21	64	195	37

Note: *, ** and *** indicate significance at the 1%, 5% and 10% levels, respectively.
The standard errors of the coefficients are in parenthesis. For variable definitions see Table 2.

do not seem to increase their interbank borrowings at a time of monetary tightening in order to maintain loan supply. Taking Tables 2–4 together, there only seems to be reasonable evidence of a bank lending channel for banks in the ECU500–999.9 million and ECU2000–4999.9 million asset size categories.

So far we have only considered the bank lending channel examining banks of different size. Table 5 presents estimates similar to Kishan and Opiela (2000) illustrating the response of banks balance sheets according to both asset size and capital strength. Note that we had to collapse the previous six asset size categories down into three because of small numbers of observations for certain bank types. Table 5 illustrates that there is a significant contemporaneous inverse relationship between bank lending and change in money market rates for undercapitalised small and large banks across the 11 EMU countries. This relationship also holds for lagged money market rates and undercapitalised medium-sized banks. In the case of small and large banks the relationship is contemporaneous whereas for medium-sized banks there is a significant lagged relationship as they probably are better insulated from monetary policy shock. While we only have three size categories to consider, there does not appear to be any systematic size effect regarding the bank lending channel. The evidence points to the fact that all sizes of undercapitalised banks, per se, are more likely to respond to changes in policy.

Tables 6–9 shows country estimates according to bank size and capital strength for the largest EMU banking markets. Surprisingly the tables reveal little evidence of a lending channel for either different bank sizes or capital strength. As de Bondt (1999) finds, Italian banks seem most likely to contract their loans at the time of a monetary tightening, all these banks are adequately or overcapitalised. In contrast to de Bondt, however, there is no evidence of a bank lending channel in Germany and France. In Spain there is some evidence that a lending channel exists for the largest undercapitalised and adequately capitalised banks. These results appear to conflict with our previous estimates where the pooled estimates suggested that a lending channel existed mainly through relatively undercapitalised banks. It could, of course, be that the bank lending channel is more prevalent for undercapitalised banks operating in the smaller EMU countries. The above country specific results may also differ because of the small number of observations in various size/capital strength categories. Finally, it could be that a lending channel exists for the major EMU banking systems but the period of adjustment is less than one year – but because we do not have quarterly bank account data we cannot test for this. Overall, our results find evidence of a bank lending channel in the EMU area mainly transmitted through undercapitalised banks operating in the smaller banking systems.

5. Conclusions

This paper adds to the confusion on evidence of a bank lending channel in Europe. Following the approach suggested by Kishan and Opiela (2000) we use bank balance sheet to estimate the response of bank lending to changes in monetary policy stance between 1991 and 1999. In particular, we classify banks according to asset size and

capital strength to see if these factors have a significant impact on the lending channel. Using a panel data approach we find that across the EMU systems, undercapitalised banks (of any size) tend to respond more to change in policy. There is little evidence to suggest that only small undercapitalised banks are the main conduit of the bank lending channel. These results, however, need to be qualified. When we look at individual country estimates for France, Germany, Italy and Spain only in the latter two countries is their evidence of a bank lending channel. By implication, it seems that the bank lending channel is more prevalent for undercapitalised banks operating in the other smaller EMU countries. Overall, our results find more evidence than Favero et al. (1999) and less evidence than de Bondt (1999) of a bank lending channel across Europe. This suggests that more research is needed to further investigate bank lending channels in the smaller EMU countries. Greater attention perhaps also needs to be paid to improving bank balance sheet data availability and model specification, including the use of a wider array of monetary stance indicators and different lag structures.

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Appendix A. Average composition of bank balance sheets in EMU countries

EMU countries	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total assets									
Austria	610	662	702	728	759	778	816	836	1,004
Belgium	9,348	11,119	11,563	12,273	14,199	16,001	18,299	19,001	47,332
Finland	11,125	10,325	8,622	7,924	9,713	9,658	10,425	11,299	7,824
France	7,738	8,648	9,101	9,160	9,745	10,996	12,121	12,079	41,527
Germany	6,656	3,701	4,168	4,545	4,982	5,538	6,281	6,060	9,599
Ireland	4,526	4,739	4,390	4,680	5,324	5,709	8,686	11,224	13,451
Italy	4,720	6,247	7,925	8,664	9,138	10,712	11,546	9,867	60,076
Luxembourg	2,734	3,424	3,360	3,620	3,791	4,084	4,408	4,699	9,348
Netherlands	5,541	15,298	19,891	20,646	22,572	26,552	33,764	46,592	146,735
Portugal	802	3,367	3,994	4,358	5,525	6,279	7,094	7,846	16,644
Spain	13,963	8,549	9,596	10,280	11,211	11,943	13,515	14,080	13,981
Total loans									
Austria	339	399	389	414	431	441	469	455	282
Belgium	3,374	4,256	4,336	4,515	5,128	5,622	6,358	7,179	19,183
Finland	6,403	5,625	4,574	3,651	4,819	4,797	4,873	6,084	3,839
France	4,080	4,217	4,102	4,081	4,113	4,417	4,837	4,945	17,787
Germany	4,095	2,169	2,373	2,538	2,778	3,034	3,374	3,112	5,534
Ireland	3,315	2,778	2,522	2,702	3,063	3,473	5,486	7,382	8,282
Italy	2,314	3,148	4,312	4,383	4,777	5,457	5,893	5,126	33,215

EMU countries	1991	1992	1993	1994	1995	1996	1997	1998	1999
Luxembourg	812	900	806	760	819	878	955	1,011	1,924
Netherlands	4,139	9,466	12,017	12,495	13,500	15,860	19,336	25,137	78,112
Portugal	301	1,421	1,618	1,735	2,171	2,556	3,042	3,937	9,347
Spain	7,285	4,364	4,228	4,637	4,977	5,481	6,508	7,197	7,263
Total deposits									
Austria	525	548	569	580	594	605	645	665	922
Belgium	8,377	10,100	10,503	11,170	12,851	14,366	16,224	16,637	41,012
Finland	6,630	5,962	5,250	5,553	7,265	7,363	7,995	9,045	6,741
France	5,491	6,552	6,881	6,979	7,399	8,265	9,015	9,044	28,655
Germany	3,860	2,350	2,628	2,786	3,005	3,325	3,826	3,876	3,596
Ireland	3,505	4,119	3,725	3,960	4,525	4,810	7,401	9,484	11,580
Italy	3,386	4,590	6,157	6,444	6,812	7,607	7,972	6,680	38,851
Luxembourg	2,385	2,983	2,958	3,177	3,254	3,464	3,675	3,864	7,292
Netherlands	2,477	11,734	14,152	14,551	15,627	17,913	22,782	31,721	103,711
Portugal	347	1,292	1,654	2,182	2,788	3,097	3,330	3,188	5,563
Spain	9,764	6,853	7,922	8,454	9,312	9,797	11,059	11,319	11,017
Total securities									
Austria	235	230	278	284	297	306	315	350	692
Belgium	2,734	2,835	3,141	3,295	3,953	4,827	5,848	5,800	13,230
Finland	3,269	3,457	2,994	3,523	4,022	4,174	4,779	4,056	3,154
France	2,990	3,793	4,345	4,430	4,916	5,741	6,302	6,015	18,180
Germany	2,320	1,422	1,688	1,889	2,078	2,376	2,763	2,814	3,874
Ireland	999	1,599	1,519	1,625	1,882	1,853	2,627	2,998	4,237
Italy	1,678	2,207	2,864	3,409	3,433	4,226	4,565	3,748	19,299
Luxembourg	1,826	2,397	2,443	2,739	2,831	3,053	3,272	3,497	7,008
Netherlands	1,249	4,956	6,539	6,875	7,799	9,289	12,528	18,921	57,935
Portugal	672	2,792	3,371	3,710	4,805	5,429	6,061	6,629	13,195
Spain	5,082	3,338	4,532	4,659	5,219	5,392	5,796	5,517	5,227
Total interbank deposits									
Austria	244	256	257	257	272	282	317	318	695
Belgium	3,010	3,106	3,312	3,656	4,522	5,153	5,993	5,818	12,169
Finland	2,873	2,054	1,383	1,304	1,533	1,665	1,929	1,824	1,490
France	2,354	2,616	2,937	2,976	3,179	3,668	3,978	3,683	11,074
Germany	1,673	917	1,063	1,115	1,258	1,400	1,717	1,753	1,697
Ireland	1,552	986	873	981	1,192	1,192	1,695	2,192	3,069
Italy	1,198	1,731	2,364	2,449	2,492	2,834	3,148	2,550	14,096
Luxembourg	1,190	1,322	1,377	1,496	1,590	1,678	1,815	1,978	3,999
Netherlands	1,264	3,264	3,952	3,943	4,359	5,388	7,025	10,302	26,874
Portugal	186	558	767	898	1,294	1,522	1,761	2,077	4,582
Spain	2,695	1,914	1,915	1,916	1,934	2,092	2,358	2,373	2,173

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