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## Banking sector (under?) development in Central and Eastern Europe

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Zentrum für Europäische Integrationsforschung  
Center for European Integration Studies  
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# Working Paper

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# **Banking Sector (Under?)Development in Central and Eastern Europe**

Jürgen von Hagen<sup>\*</sup> and Valeriya Dinger<sup>\*\*</sup>

This Version: February 2005

## **Abstract:**

By introducing a new measure of the banking systems' size, the paper challenges the existing consensus on severe underdevelopment of the CEE banking sectors. We argue that the existing studies on the size of CEE banking systems exaggerate the real degree of underdevelopment because common measures of the size of the banking system produce downward biased results when applied to transition economies. We compare various measures of the size of the CEE banking sectors with those of several "old" European Union (EU) member countries which are used as benchmarks. The comparison indicates that indeed the banking sectors in the CEE countries lag behind the most developed financial systems in the EU, but are very close to the levels in the financially less developed EU countries.

Key words: financial intermediation, transition economies, banking sectors' size

JEL: G21, P34

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## 1. Introduction

The existence of developed financial institutions is an important prerequisite for an efficient allocation of capital and sustainable economic growth. Therefore, viable and well functioning banking sectors are important for the development path of transition economies where the process of financial intermediation had been profoundly reshaped in accordance with the liberalizing of the business environment. The literature on banking in transition economies argues that banking sectors in Central and Eastern European countries are much smaller than those in mature market economies (Bonin and Wachtel, 2002; Anderson and Kegels, 1998), and that this puts a limit on the growth potential of these economies.

In this paper we present an analysis of the size of the banking sectors in ten Central and Eastern European (CEE) countries<sup>1</sup>. We focus especially on the sectors' ability to provide efficient financial intermediation between savers and investors in the economy. By introducing a new measure of the size of banking systems, we challenge the existing consensus on the severe underdevelopment of the CEE banking sectors. We argue that common measures of the size of the banking system produce downward biased results when applied to countries with a low stock of financial wealth in general and to transition economies in particular. Existing studies on the size of CEE banking systems, therefore, exaggerate the real degree of underdevelopment. We compare various measures of the size of the CEE banking sectors with those of several "old" European Union (EU) member<sup>2</sup> countries which are used as benchmarks. The comparison indicates that indeed the banking sectors in the CEE countries lag behind the most developed financial systems in the EU, but are very close to the levels in the financially less developed EU countries.

Next, we explore various reasons for the comparatively low levels of financial intermediation as measured by traditional methods used in the literature (Bonin and Wachtel, 2002; Anderson and Kegels, 1998). We concentrate in detail on three such arguments. The first points to the low initial levels of bank activity in CEE countries as a cause of the low current

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<sup>1</sup> Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia

<sup>2</sup> later on only referred to as EU countries

levels of the banks' financial intermediation. The second maintains that as capital markets develop they at least partially substitute for the necessity of financial intermediation by banks. Finally, the third argument stresses the low involvement of individual CEE banks in financial intermediation as a reason for the lower financial intermediation performance of the banking sectors.

We focus this analysis on the developments in ten CEE countries: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia during the time period from 1993 to 2001.

Regarding the size of the banking industries, we relate the level of financial intermediation to proxies for the available financial wealth in the sample countries, rather than to GDP as the literature commonly does. We do this to account for the fact that transition economies have lower stock of private financial wealth than mature market economies<sup>3</sup>. With low wealth levels the size of the banking industry (financial intermediation in general) is constrained by the low stock of intermediable resources, unless capital inflows compensate fully for the small volume of domestic financial wealth. The literature on the integration of capital markets (Bayoumi, 1990; French and Poterba, 1991; Baxter and Crucini, 1993)<sup>4</sup> suggests that this is typically not the case.

Due to the low stock of financial wealth, banking sectors appear small relative to GDP even though their size relative to financial wealth may be comparable with the size of banking sectors in mature market economies. Indeed, the results of our analysis point to the fact that GDP-based measures of the size of CEE banking sectors underestimate the ability of the banking sector to intermediate financial wealth. When the financial intermediation ability of the banking sectors is measured relative to financial wealth, the gap between the CEE countries and the EU countries is smaller than indicated by GDP-based measures.

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<sup>3</sup> The fact that the stock of financial wealth in CEE transition economies is low has been pointed out by the World Bank and IMF (see Koch-Weser, 1996). Unfortunately there exist, to our knowledge, no systematic studies on the stock of financial wealth in CEE.

<sup>4</sup> This literature concentrates on analyzing the 'home-bias puzzle' that was initially pointed out by Feldstein and Horioka (1980)

Nevertheless, the gap still exists and the banks' financial intermediation in all CEE sample countries is underdeveloped relative to EU countries with developed financial systems.

This paper also explores alternative arguments, presented in the literature, explaining this low level of financial intermediation provided by the banks.

The first of these arguments is based on the fact that the initial level of bank intermediation at the onset of the transition was extremely low (see Anderson and Kegels, 1998). The underdevelopment of bank intermediation in planned economies is explained by the fact that the intermediation function was generally performed by the governments. We test this argument by constructing two measures of marginal intermediation that illustrate the changing importance of bank intermediation. The first measure compares the change of bank deposits to gross savings in the economy; the second ties the change of domestic credit to the sum of investments and government deficit. These two measures allow us to illustrate the degree of bank penetration into the financial intermediation chain. Generally, the results of our analysis indicate an increasing importance of both deposit accumulation and loan supply by banks in the early transition period. Later in the transition process a trend of increasing importance of bank intermediation is only observed with regard to deposit gathering. Deposit accumulation by CEE banks is therefore approaching the levels prevailing in the EU. With regard to loan supply, the trend of increasing bank importance slowed during the late 1990s. Therefore, our analysis only partly supports the argument that the low starting levels of bank intermediation can explain the low level of bank intermediation still observed in CEE countries.

Secondly, we focus on the argument that the development of capital markets has evoked changes in the financial intermediation function of banks. This view is thoroughly discussed in Danthine et. al. (1999). Danthine et. al. (1999) argue that this could either be because the capital markets substitute the banks in undertaking the main share of financial intermediation between savers and investors in the economy, or because the banks' financial intermediation has changed in a way that the lending activity is moving towards securitization of loans and therefore is reflected off-balance sheet. As suggested by Fender and von Hagen (1998),

securitization of loans does change the behavior of banks and may modify monetary policy transmission. However, since the process of securitization does not eliminate a bank's role in monitoring borrowers, the banks continue to play an essential role in the intermediation chain, even though it is no longer reflected in the existence of loans on the banks' books. Nevertheless, these explanations are based on the assumption of sufficient capital market development. We present a closer look at the development of capital markets in CEE in absolute measures and relative to banking sector development in order to see whether these are the valid explanations for the low levels of bank intermediation in CEE countries. The results show that CEE capital markets are severely underdeveloped, even relative to banking sectors. Thus, the argument that the insufficient levels of classical financial intermediation by CEE banks are caused by the advanced development of capital markets lacks empirical support.

Finally, we explore the argument that the level of bank intermediation in CEE countries is low because the financial intermediation productivity of banks is low as measured by aggregate level variables, such as loans to total banking industry assets and deposits to total banking industry assets (Miller and Petranov, 2002). To test this argument, we analyze micro level balance sheet data from a large sample of CEE banks. The use of micro level data is an important innovation in our research<sup>5</sup>. It allows us to detect heterogeneity among the banks in individual banking systems and indicates that the low aggregate levels of financial intermediation productivity in some CEE countries reflect the specialization in deposit gathering by some banks and in loan supply by others.

Throughout this analysis we use the three EU countries Germany, the Netherlands and Greece as benchmarks. We prefer a comparison with these benchmark countries over average variables for the whole sample of EU members as the differences of the structure of the financial systems across the EU countries are significant<sup>6</sup> and distort the overall comparison.

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<sup>5</sup> To our knowledge the existing literature of financial intermediation activities of banks in transition economies only focuses on aggregated data

<sup>6</sup> For detailed discussions on the differences across European banking systems see Allen and Gale (1999), Demirguc-Kunt and Levine (2001), Danthine, et al (1999)

Choosing Germany, the Netherlands and Greece as benchmark countries, we have representatives of three different types of financial structures coexisting in the Union<sup>7</sup>. First, Germany being the largest banking system of the EU is a textbook example of highly developed bank-based financial system (similar to Italy, Austria, Belgium, etc.). A comparison of the CEE banking sectors with that of Germany will give us an idea of the extent to which the financial intermediation activities of the CEE banks are approaching those of the banking institutions in developed bank-based systems. The Netherlands (similar to UK, Denmark and Sweden) typify a developed market-based financial system<sup>8</sup>. We can expect that Dutch banks have a different intensity of involvement in classical financial intermediation relative to bank-based systems since in countries with market-based financial systems the function of channeling funds to the real economy is shared between the banking institutions and the equity and debt markets. The inclusion of the Netherlands as a benchmark case controls for the possibility that some of the CEE countries might have directed the transformation of their financial systems towards a more market-based system. Finally Greece (a country where both the banking system and the capital markets<sup>9</sup> are considered underdeveloped) serves as an example of a relatively underdeveloped bank-based financial system.

The analysis is based on country level data provided by the International Financial Statistics (IFS) issues of the International Monetary Fund, the European Bank for Reconstruction and Development's Transition Reports, Thomson Financial's Datastream, International Statistics issues of the Bank for International Settlements and on bank level data provided by BankScope<sup>10,11</sup>.

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<sup>7</sup> Demirguc-Kunt and Levine (2001)

<sup>8</sup> Demirguc-Kunt and Levine (2001) define a financial system as market-based or bank-based depending on an index consisting of the following ratios: market capitalization versus bank assets, total value traded on the security market versus bank credit and security market turnover versus overhead costs of the banking sector.

<sup>9</sup> Demirguc-Kunt and Levine (2001)

<sup>10</sup> BankScope is a database provided by Bureau van Dijk and FITCH.

<sup>11</sup> Table A.1 in Appendix A presents the data sources for each variable.



The rest of the paper is organized as follows; Section 2 presents alternative measures of the size of the banking sectors and compares these measures across the CEE and the EU benchmark countries. Section 3 focuses on the changes in the importance of bank intermediation. Section 4 analyses the development of capital markets in CEE countries relative to banking systems. Section 5 presents the results of the micro-level analysis of bank financial intermediation productivity, and Section 6 gives the conclusion.

## 2. Are banking sectors in CEE countries smaller than those in the EU?

This section concentrates on different size measures of CEE banking sectors and their ability to provide financial intermediation. First, following the literature<sup>12</sup> we measure the size of the banking industry as the aggregate volume of bank assets in the country relative to GDP. Furthermore, following Demirgüç-Kunt and Levine (2001), we include two additional measures of banking sector performance with regard to financial intermediation. One is the ratio of deposits to GDP, which measures the deposit-gathering function of banks. The other is the ratio of domestic bank credit to GDP, which measures the loan supply function of the banking sectors.

**Table 1: Aggregate bank assets to GDP, in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	150	133	93	158	43	33	33	34	39
<b>Czech Republic</b>	95	99	103	100	109	103	103	99	96
<b>Estonia</b>	27	31	31	36	55	50	56	61	67
<b>Hungary</b>	67	62	58	57	58	58	59	60	61
<b>Latvia</b>	68	44	31	36	47	42	47	58	66
<b>Lithuania</b>	24	27	22	20	22	24	26	28	29
<b>Poland</b>	47	44	42	44	45	48	50	49	52
<b>Romania</b>	40	31	35	39	26	29	27	25	25
<b>Slovakia</b>	76	65	65	78	97	90	79	86	90
<b>Slovenia</b>	54	59	62	64	67	69	70	71	84
<b>Germany</b>	153	154	160	170	180	191	218	224	226
<b>Greece</b>	92	89	98	99	101	102	112	116	126
<b>Netherlands</b>	170	162	171	181	199	206	240	246	259

Source: Own calculations based on IFS data

As presented in Table 1 banking sectors in CEE countries are significantly smaller with respect to the ratio of aggregate volume of bank assets to GDP than those of Germany and the Netherlands. Only in the Czech Republic is the size of the banking sector, as measured by this

<sup>12</sup> See Demirgüç-Kunt and Levine (2001) and Bonin (2001)

proxy, close to the lowest ranked EU country (Greece). The rest of the sample transition countries' banking sectors are much smaller than the one of Greece. Furthermore, this measure indicates a trend of increasing the size of the banking sectors only in Estonia and Slovenia. On the contrary, in Bulgaria a drastic decline in the ratio of bank assets to GDP is observed. In the rest of the CEE countries the levels of the variables in 2001 are very similar to the ones in 1993.

**Table 2: Aggregate deposits to GDP, in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	68	71	58	64	24	20	21	22	27
<b>Czech Republic</b>	62	62	66	63	63	59	57	64	66
<b>Estonia</b>	19	18	17	20	25	23	27	31	35
<b>Hungary</b>	44	42	40	41	40	39	39	39	40
<b>Latvia</b>	21	24	15	14	17	17	17	20	23
<b>Lithuania</b>	16	18	15	11	12	13	15	17	21
<b>Poland</b>	29	29	28	29	31	34	37	37	40
<b>Romania</b>	18	17	20	23	21	22	21	20	20
<b>Slovakia</b>	56	55	56	58	56	54	56	59	60
<b>Slovenia</b>	28	31	34	37	40	42	43	45	52
<b>Germany</b>	61	60	60	64	64	66	99	98	101
<b>Greece</b>	52	56	57	59	59	55	58	57	98
<b>Netherlands</b>	77	73	75	76	77	86	97	100	104

Source: Own calculations based on IFS data

**Table 3: Aggregate domestic bank credit to GDP, in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	127	104	71	112	23	18	18	17	20
<b>Czech Republic</b>	73	76	76	72	72	64	60	54	49
<b>Estonia</b>	13	13	14	22	32	33	35	39	43
<b>Hungary</b>	97	93	82	72	66	63	53	55	50
<b>Latvia</b>	18	23	15	13	15	18	20	25	31
<b>Lithuania</b>	16	19	15	12	13	14	17	16	16
<b>Poland</b>	41	37	32	33	34	35	38	34	36
<b>Romania</b>	21	18	24	29	19	22	18	14	12
<b>Slovakia</b>	72	57	48	56	66	62	59	58	62
<b>Slovenia</b>	34	32	37	36	36	40	43	45	48
<b>Germany</b>	99	102	103	109	113	119	121	125	126
<b>Greece</b>	110	101	96	91	88	85	94	101	100
<b>Netherlands</b>	106	107	112	119	127	131	147	153	154

Source: Own calculations based on IFS data

With regard to the variables measuring the financial intermediation performance of banks relative to GDP, we observe both lower deposit accumulation and loan supply of CEE banks. As shown in Table 2, concerning the deposit accumulation function, the Czech Republic and Slovakia have the most developed banking sectors among the accession countries. But even

there, banks accumulate significantly less deposits relative to GDP, than the banks in the EU benchmark countries.

Table 3 illustrates that the loan supply function of CEE banks is especially underdeveloped. Whereas in Germany and the Netherlands the value of domestic bank credit significantly exceeds the level of GDP, in the Czech Republic, Hungary, Slovakia and Slovenia domestic bank credit only equals about half of GDP. In the rest of the sample countries domestic bank credit represents less than a third of GDP. Furthermore, only in Estonia and Slovenia are the values of domestic bank credit to GDP ratio increasing.

In view of this, we confirm the notion that in CEE countries banking sectors are smaller and provide less financial intermediation relative to GDP than in mature market economies. However, the question arises, whether financial intermediation capacity should be measured in relation to GDP. Financial intermediation is the sum of activities serving the intermediation between savers and investors. It requires the existence of financial resources (wealth) to be intermediated. However this stock of financial wealth is, for historical reasons, lower in transition economies (see Koch-Weser, 1996) than in mature market economies. Thus, the size of the banking industry and its financial intermediation capacity measured in relation to the stock of financial wealth might represent a better measure for the development of the banking sector.

Unfortunately, there exist to our knowledge, no systematic data on the stock of financial wealth in the CEE countries. To close this gap we introduce a measure of the stock of financial assets in the economy as a proxy for financial wealth and then relate the size of the banking sectors to this new financial wealth proxy. To create such a measure we add together broad money (equal to the sum of currency outside the banks and the demand, time, savings and foreign currency deposits of residents), money market instruments, and bonds issued by banks and monetary authorities. In this measure we do not include equity shares in the stock of financial assets, because data is not available for all countries and years. Non-bank corporate debt securities are also not included in this and the following proxy for financial

wealth because, as we show later<sup>13</sup>, government securities held by banks, represent in CEE countries the main share of domestic securities<sup>14</sup>.

Table 4 presents the size of the banking sectors relative to this new financial wealth proxy. Moreover, for those years and countries where data on stock market capitalization is available we add the stock market capitalization to the sum of broad money, money market instruments and bonds<sup>15</sup>. Table 5 presents the size of the banking sectors relative to this broader measure.

As illustrated in Table 4 banking sectors of the CEE accession countries are generally smaller than the banking sectors in the EU benchmark countries, but the gap between these two groups of countries is much smaller than indicated by the traditional measure. So, for example, Latvia and Slovenia according to this new measure have banking sectors of a similar size to that of Greece. Furthermore, the banking sectors of Bulgaria and Romania, which according to the bank assets to GDP measure were classified as severely underdeveloped, have according to this measure a size comparable to the one of the Czech or the Hungarian banking sectors.

**Table 4: Aggregate bank assets to a proxy of the stock of aggregate financial assets, in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	194	170	142	223	133	115	108	96	94
<b>Czech Republic</b>	111	110	106	109	110	107	102	99	105
<b>Estonia</b>	69	83	90	102	127	117	113	120	118
<b>Hungary</b>	107	107	104	103	105	107	110	109	107
<b>Latvia</b>	175	104	107	124	142	139	158	155	162
<b>Lithuania</b>	64	79	78	87	89	89	91	91	92
<b>Poland</b>	115	112	111	110	106	104	102	104	101
<b>Romania</b>	173	140	135	137	106	117	108	106	108
<b>Slovakia</b>	122	106	102	114	148	144	123	127	131
<b>Slovenia</b>	171	169	162	158	151	146	145	143	146
<b>Germany</b>	189	187	194	199	210	215	224	227	228
<b>Greece</b>	105	101	117	123	130	139	133	143	153
<b>Netherlands</b>	139	137	141	146	160	163	171	168	170

Source: Own calculations based on IFS data

<sup>13</sup> See Section 4

<sup>14</sup> Central banks' data indicate that in the Czech Republic in the period 1995-2001 banks held between 60 and 70% of the volume of domestic securities. In Hungary the share of domestic securities held by banks is about 55% and in Poland around 80%.

<sup>15</sup> The assumption, based on the Feldstein-Horioka home bias puzzle, that equity traded in domestic markets is mostly held by domestic agents is made here. See Folkerts-Landau et. al. (1997) for data on the low volumes of international portfolio investments in CEE.

As shown in Table 5 if banking system assets are related to a broader proxy of domestic wealth including equity shares, then again in most CEE countries the size of the banking systems are very close to that of Greece. Furthermore, Latvian and Slovakian banking sectors have by this measure a size similar to the Dutch banking sector<sup>16</sup>. These results indicate that the ratio of bank assets to GDP presents a downward biased measure for the size of the banking industry in the accession countries. The magnitude of the bias is especially large in the poorer CEE economies, where financial wealth is small relative to officially measured economic activity.

**Table 5: Aggregate bank assets to a proxy of the stock of aggregate financial assets including stock market capitalization, in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Bulgaria	na	na	141	222	137	91	90	84	82
Czech Republic	na	95	81	81	86	89	83	80	87
Estonia	na	na	na	na	81	96	65	71	71
Hungary	103	100	94	84	64	69	66	74	77
Latvia	na	na	107	113	120	115	131	127	132
Lithuania	na	77	71	58	52	65	66	62	62
Poland	105	103	101	95	87	81	72	74	73
Romania	na	140	133	136	98	103	96	91	96
Slovakia	na	95	92	98	130	134	116	120	123
Slovenia	na	152	154	145	125	116	116	96	105
Germany	168	165	153	138	134	132	129	136	144
Greece	93	88	98	97	92	88	85	88	85
Netherlands	94	89	88	82	79	76	94	101	125

na – data not available

Source: Own calculations based on IFS, Datastream and Transition Report

In sum, banking sectors in CEE countries are generally smaller than those of the developed financial system in the EU countries. However, the gap is not as severe as argued in studies based on the traditional approach of measuring the size of the banking system and the level of bank intermediation in relation to GDP. When we relate the sum of aggregate banking assets to a proxy for the stock of financial assets, the banking sectors in all CEE countries, but Latvia, are indicated to be only slightly smaller than the one of Greece. The Latvian banking sector is even larger than the Greek one as measured in this relation. These results indicate that the low level of bank intermediation in CEE countries is to a large extent caused by the low level of accumulated financial wealth.

<sup>16</sup> The measure presented in Table 5 indicates a much smaller size of the Dutch banking sector than that presented in Table 4, which is due to the market-orientation of the Dutch financial system. In the environment of highly developed capital markets banks intermediate a smaller proportion of financial wealth.

### 3. Is the role of bank intermediation in the CEE countries increasing?

In this section we focus on the question of whether the role that banks play in the process of channeling funds from savers to investors is gaining in importance. For this purpose we introduce two variables that we call ‘measures of marginal financial intermediation’. The first variable equals the ratio of the change in deposits between time period t and t-1 to the gross savings in period t. This ratio measures the change in the relative importance of bank deposits in the stock of financial wealth. However, comparability of these ratios across countries is conditional on the differences among the money multipliers and we should bear in mind these differences when analyzing the values of the above ratio. The second measure equals the ratio of the change of domestic bank credit between time period t and t-1 to the sum of investment and government deficit<sup>17</sup> in period t. This measure is an illustration of the share of investments in the economy that has been financed by bank credit.

**Table 6: Marginal financial intermediation:  $\Delta$  aggregate deposits with banks/gross savings, in %**

	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	156	132	54	16	6	17	27	49
<b>Czech Republic</b>	32	43	16	16	6	0	38	30
<b>Estonia</b>	22	22	40	48	7	27	33	35
<b>Hungary</b>	33	38	41	41	27	23	25	29
<b>Latvia</b>	34	-38	13	32	9	6	26	21
<b>Lithuania</b>	41	19	-4	21	13	14	25	26
<b>Poland</b>	52	35	36	30	34	23	21	25
<b>Romania</b>	52	43	46	54	43	38	29	35
<b>Slovakia</b>	31	34	26	13	8	19	27	20
<b>Slovenia</b>	39	34	30	32	28	21	30	51
<b>Germany</b>	6	12	21	8	20	15	7	24
<b>Greece</b>	69	47	43	34	5	39	16	19
<b>Netherlands</b>	1	21	20	23	27	32	38	37

Source: Own calculations based on IFS data

As shown in Table 6, the change of bank deposits represents in CEE countries on average a higher share of gross saving than in the EU benchmark countries. The fact that CEE countries have lower money multipliers than the EU benchmarks<sup>18</sup> reinforces the implication that CEE banks are accumulating a higher share of savings than banks in the EU. Especially in 1994-1996 CEE banks accumulated a very high share of savings. Later on the pace slowed down

<sup>17</sup> Government deficit is included in the denominator since the data for the nominator does not allow us to distinguish between credit to the private sector and credit to the government.

<sup>18</sup> See Central banks’ Annual Reports

but the values of this ratio remain higher in the accession than in the “old” member countries. This result indicates that the deposit gathering performance of CEE banking sectors is catching up to the EU levels.

With regard to the loan supply function, at least in the mid 1990s the change in bank loans represented a very large share of investment in all CEE countries except Slovakia (see Table 7). Later on, the importance of bank credit decreased in most of the countries to levels below the ones of the EU benchmarks. In times when substantial amounts of bad loans were written-off the bank books, we even observe negative change in the volume of domestic credit outstanding (i.e. Slovakia in 1994, Latvia in 1995). Only in four of the sample CEE countries (Bulgaria, Estonia, Latvia and Slovenia) the share of bank credit to investments is comparable to any of the EU benchmarks. Therefore, the data present no evidence that the level of bank loan supply in the CEE countries is catching up to the EU levels.

**Table 7: Marginal financial intermediation:  $\Delta$  domestic bank credit/(investment +government deficit), in %**

	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	58	61	45	16	31	42	73	61
<b>Czech Republic</b>	46	35	17	16	-6	-8	-9	-1
<b>Estonia</b>	11	19	43	47	16	12	32	30
<b>Hungary</b>	52	37	21	30	23	-11	33	6
<b>Latvia</b>	64	-34	3	25	16	8	27	28
<b>Lithuania</b>	31	7	1	14	8	9	-2	6
<b>Poland</b>	42	26	34	27	23	23	7	18
<b>Romania</b>	43	45	49	25	55	19	10	13
<b>Slovakia</b>	-15	-3	37	44	5	2	14	23
<b>Slovenia</b>	29	46	19	17	32	27	29	30
<b>Germany</b>	30	21	31	29	41	39	35	33
<b>Greece</b>	19	37	21	27	19	66	63	54
<b>Netherlands</b>	31	44	52	72	70	74	84	45

Source: Own calculations based on IFS data

To summarize, at least in the early transition period, CEE banking sectors were characterized by high levels of marginal intermediation. Whereas this process is still valid with regard to the deposit gathering activities of banks, the later years are marked by no catching up concerning the loan supply by CEE banks. Thus it is not likely that the level of bank loan supply in the CEE countries will reach the level of the EU benchmarks in the future.

#### 4. Are capital markets compensating for the low level of financial intermediation provided by banks?

In this section we explore the argument that the low levels of financial intermediation provided by the CEE banks are a result of the development of capital markets. So, for example, Danthine, et. al. (1999) argue that banks may provide lower levels of classical financial intermediation (as measured by deposit and loan volumes) because capital market development serves at least partially as a substitute. Furthermore, they point out the fact that, even if financial intermediation is mainly performed by banks, classical measures like loans to GDP may fail to reflect this since they do not account for off-balance sheet activities of banks. In this section we present an overview of capital market developments in CEE countries and analyze their relevance for the low levels of loan supply.

**Table 8: Domestic debt securities to GDP, in %**

		1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Czech Republic</b>	all issuers	11	17	23	22	26	36	47	45	43
	government	11	14	18	15	17	29	38	34	34
<b>Hungary</b>	all issuers	23	28	23	31	27	32	32	32	38
	government	23	27	23	30	25	30	30	30	35
<b>Poland</b>	all issuers	22	20	20	16	15	18	16	19	24
	government	21	20	20	16	15	18	16	19	24
<b>Germany</b>	all issuers	69	85	85	75	74	96	86	92	81
	government	22	27	26	24	24	31	29	32	32
<b>Greece</b>	all issuers	66	74	74	81	78	82	71	77	78
	government	62	70	71	80	77	82	71	77	78
<b>Netherlands</b>	all issuers	69	78	79	78	81	88	87	94	94
	government	45	48	50	49	48	51	46	44	41

Source: Bank of International Settlement

Following Demirgüç-Kunt and Levine (2001) we use the ratio of stock market capitalization to GDP as a measure for capital market development. This measure ignores both government and corporate debt markets, but is still frequently used in the literature on transition economies (Anderson and Kegels, 1998; Hencsey and Hultgren, 2001) as a proxy for capital market development. Reasons why this measure is still used in the transition literature include the following. First, systematic data about debt markets that would allow a cross-country comparison is unavailable<sup>19</sup>. Second, as shown by Pissarides (2001) and Hencsey and Hultgren (2001) corporate debt markets are negligibly small in CEE countries. Hencsey and

<sup>19</sup> The Bank for International Settlement provides debt market data for only three of the CEE countries (the Czech Republic, Hungary and Poland)



Hultgren (2001) mention that among the CEE countries debt (both government and corporate) markets are most developed in the Czech Republic, Hungary and Poland.

However as we show in Table 8 even in these countries the size of non-government security markets are negligible as compared to those in Germany and the Netherlands. Furthermore, most of the government debt securities are held by banks (Bonin, 1998)<sup>20</sup> and thus developed government securities markets cannot account for transfer of intermediation from banks to markets.

**Table 9: Stock market capitalization to GDP, in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	na	na	1	0	0	8	6	5	6
<b>Czech Republic</b>	na	14	30	31	27	20	23	23	19
<b>Estonia</b>	na	na	na	na	25	9	37	35	38
<b>Hungary</b>	2	4	6	12	35	30	36	26	22
<b>Latvia</b>	na	na	0	3	6	6	6	8	9
<b>Lithuania</b>	na	1	3	11	18	10	11	14	15
<b>Poland</b>	4	4	4	7	10	13	20	19	20
<b>Romania</b>	na	0	0	0	2	3	3	4	3
<b>Slovakia</b>	na	7	7	12	9	5	4	4	5
<b>Slovenia</b>	na	4	2	4	9	12	12	24	22
<b>Germany</b>	24	24	24	29	40	48	72	67	58
<b>Greece</b>	12	14	16	21	32	43	48	51	53
<b>Netherlands</b>	59	64	74	96	128	145	185	170	132

Source: Datastream and Transition Report

Table 9 presents the values of the ratio of stock market capitalization to GDP in the accession and the benchmark countries. The data illustrate the gap between the size of stock markets relative to GDP in the accession countries and the EU benchmarks. Even in Greece, the country that represents an underdeveloped bank-based system, the stock market has a much larger size relative to GDP than the highest developed stock markets in the accession countries, those in Estonia and the Czech Republic.

Furthermore, in the CEE countries we do not observe a general trend of approaching the higher EU levels. In the early transition period the volume of market capitalization increased in all countries due to government efforts to enhance capital market participation through privatization schemes. Later on, in most of the countries the process of capital market

<sup>20</sup> See also the discussion in Section 2

development slowed down significantly. Only in Estonia and Poland is a trend of further development observed.

**Table 10: Aggregate bank assets to stock market capitalization, , in %**

	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	na	na	18543	78970	21736	426	549	676	621
<b>Czech Republic</b>	na	696	343	321	408	512	448	426	500
<b>Estonia</b>	na	na	na	na	224	536	152	173	175
<b>Hungary</b>	2931	1480	995	456	165	194	164	230	273
<b>Latvia</b>	na	na	15616	1206	766	687	789	698	730
<b>Lithuania</b>	na	2655	849	176	125	238	245	200	190
<b>Poland</b>	1259	1246	1086	671	472	363	248	259	261
<b>Romania</b>	na	na	8648	19508	1302	878	860	648	813
<b>Slovakia</b>	na	892	969	678	1044	1913	2076	2204	2008
<b>Slovenia</b>	na	1441	3464	1782	717	563	586	294	376
<b>Germany</b>	649	652	657	588	450	396	301	336	391
<b>Greece</b>	768	647	609	459	314	256	233	227	237
<b>Netherlands</b>	288	254	231	188	156	142	112	122	159

na – data not available

Source: Own calculations based on IFS, Datastream and Transition Report

To judge the relative importance of capital markets in CEE financial systems and to provide evidence on the bank-based orientation of the financial systems, we compute (following the approach of Demirgüç-Kunt and Levine, 2001) the ratio between aggregate bank assets and stock market capitalization for each of the observed countries. Demirgüç-Kunt and Levine (2001) compute this ratio for a sample of 95 countries around the world and classify those countries with values above the median as bank-based and those with values below the median as market-based. The median ratio value in their sample is close to 200%. As shown in Table 10 among the CEE countries only Estonia has developed a market-based financial system according to this classification. In two other countries, Hungary and Lithuania, stock markets do play a significant role at least in the period after 1996. In contrast, in Bulgaria, Latvia and Slovakia, stock markets play only a marginal role compared to the banking sectors. In the remaining sample countries the values of bank assets to stock market capitalization are well below Germany's.

Altogether, the data point to a severe underdevelopment of capital markets in most CEE countries, which implies that banks are still the main providers of financial intermediation. Furthermore, it is unlikely that in financial systems with such small security markets banks could shift lending activity off balance sheet through securitization. These results indicate that

the low level of financial intermediation provided by banks cannot be explained by highly developed capital markets.

### **5. Is the financial intermediation productivity of CEE banks low?**

In this section we extend our analysis with a presentation of micro level data from bank balance sheets. We try to answer the question of whether the low levels of deposit accumulation and loan supply on the aggregate level are results of low involvement of individual banks in classical banking functions namely, deposit gathering and loan supply. To explore this question we concentrate on how banks finance their operations and on the main positions in their investment portfolio. We regard the degree to which a bank is involved in deposit gathering and in loan supply as a bank's financial intermediation productivity. The fact that we concentrate on classical loan and deposit functions when estimating the financial intermediation productivity of banks is motivated by the discussed unavailability of more advanced intermediation channels in CEE (see Section 4).

We use two variables from bank balance sheet as proxies for bank financial intermediation productivity. On the asset side a higher involvement in classical credit activities implies that loans represent a high proportion of assets<sup>21</sup>. Therefore, we choose the ratio of *loans to total assets* as a measure of credit activity. Unfortunately, BankScope does not provide separate entries on bank loans to private and public institutions. We use the entry of "loans", which includes both lending to private and public sector, keeping in mind that this measure overestimates the de facto supply of loans on commercial terms<sup>22</sup>. On the liability side, deposit gathering activity is defined in the literature as "receiving deposits from the public" or "taking deposits from individuals"<sup>23</sup>. When analyzing the deposit accumulating activities we

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<sup>21</sup> The structure of the balance sheet used by BankScope is presented on Figure A.1 in Appendix A

<sup>22</sup> The importance of this ratio can be a doubtful indicator of banks' involvement in channeling funds to the real sector if most of the credits are granted to government and municipalities. Unfortunately such information is not provided by BankScope for the Central and Eastern European banks. Nevertheless, we argue that the ratio presents relatively unbiased idea of the banks' involvement in credit supply, since government debt, especially in the years of advanced transition, is securitized (see Miller and Petranov, 2002 and Anderson and Kegels, 1998). The large volumes of government bonds hold by the banks present further evidence for the securitization of government debt.

<sup>23</sup> Freixas and Rochet (1997)

therefore concentrate on customer deposits and disregard inter-bank deposits (see Figure A.1 in the Appendix). Therefore, the ratio of *customer deposits to total deposits*<sup>24</sup> can be used as a measure for the involvement of banks in deposit gathering activities. This ratio indicates to what extent a specific banking institution is engaged in gathering deposits from the public.

Table 11 and Table 12 present the average values<sup>25</sup> of these ratios for each of the CEE sample countries and the EU benchmarks.

**Table 11: Loans to total assets, weighted average for the banking system, in %**

	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	65	38	32	25	25	28	29	31
<b>Czech Republic</b>	52	48	50	49	47	39	33	33
<b>Estonia</b>	40	44	51	51	57	56	57	55
<b>Hungary</b>	36	35	35	37	37	41	49	50
<b>Latvia</b>	31	24	23	26	45	43	37	46
<b>Lithuania</b>	55	56	45	39	41	45	41	41
<b>Poland</b>	29	33	38	41	45	49	47	46
<b>Romania</b>	40	49	52	41	32	28	31	34
<b>Slovakia</b>	49	45	47	45	44	47	43	31
<b>Slovenia</b>	49	43	42	43	48	52	52	48
<b>Germany</b>	60	59	58	57	54	51	49	48
<b>Greece</b>	35	36	38	36	37	38	42	46
<b>Netherlands</b>	67	61	56	55	53	56	54	54

Source: Own calculations based on BankScope data

**Table 12: Customer deposits to total deposits, weighted average for the banking system, in %**

	1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	34	74	66	86	89	93	93	93
<b>Czech Republic</b>	71	70	70	70	73	73	76	78
<b>Estonia</b>	94	82	81	74	78	80	87	92
<b>Hungary</b>	74	78	78	74	75	79	78	80
<b>Latvia</b>	88	92	86	86	77	79	85	83
<b>Lithuania</b>	83	90	85	87	82	84	85	85
<b>Poland</b>	81	81	77	79	79	80	80	83
<b>Romania</b>	62	58	58	71	86	85	88	90
<b>Slovakia</b>	67	74	74	74	73	76	80	89
<b>Slovenia</b>	85	87	88	90	88	86	85	83
<b>Germany</b>	63	61	60	57	58	55	57	59
<b>Greece</b>	88	88	87	85	93	92	91	92
<b>Netherlands</b>	73	72	70	69	67	70	68	68

Source: Own calculations based on BankScope data

As shown in Table 11 in most CEE countries loans represent a smaller share of bank assets than in the developed EU financial systems, Germany and the Netherlands. Exceptions are Estonia and Slovenia (for the whole period), Bulgaria in 1994, the Czech Republic in 1994 to

<sup>24</sup> The variables “*loans to total assets*” and “*customer deposits to total deposits*” are also called in the literature indicators for banks’ business mix (De Bandt and Davis, 1999) or indicators for banks’ output mix (Kwan, 2002).

<sup>25</sup> Weighted by the volume of a bank’s total assets

1998 and Hungary in 2000 to 2001. These results indicate that the low supply of loans on the aggregate level is a reflection of the low average involvement of the individual banks in lending activities.

The data presented in Table 12 illustrate that CEE banks' performance with regard to deposit gathering is on average comparable to that of the EU benchmarks. Nevertheless, differences exist: the average ratios for Estonia, Latvia, Lithuania and Slovenia are generally higher than the those in the rest of the CEE countries and Germany and the Netherlands.

Various articles on the development of the banking sectors in transition economies have pointed out that the population of banks in many CEE countries is characterized by a high level of heterogeneity. So, for example, incumbent saving banks are said to have a different involvement in deposit gathering and loan supply activities than newly entering private banks (Bonin, 1998). Furthermore, foreign banks take on different banking activities than domestic banks (Clarke, et. al, 2003). In the presence of heterogeneity the degree of financial intermediation provided by CEE banks is better described by the distribution of the variables measuring financial intermediation productivity rather than by aggregating these variables.

Figures A.2 to A.14 in the Appendix illustrate the distribution of the variable *loans to total assets* for the CEE countries and the EU benchmarks in the period 1993-2001. The figures show significant differences among the EU benchmarks. This confirms our initial prior that working with benchmark cases is superior to using an EU-wide average. Generally German banks show the highest involvement in lending; almost 75% of German banks invest more than 60% of their assets in loans. Most Greek banks, on the contrary, concentrate only a small share (below 40%) of their assets in loans. The distribution of Dutch banks indicates significant differences across banks: about 20% of banks of banks invest almost exclusively in loans, whereas another 20% hold only a minor share of loans in their assets.

The comparison between the CEE countries and the EU benchmark countries shows that in all CEE countries the share of banks that are heavily involved in lending is smaller than in the developed EU financial systems, Germany and the Netherlands. Only a minor proportion of

banks in CEE countries concentrate more than 60% of their assets in loans. All other banks have low or medium values of the ratio of *loans to total assets*, which indicates that they invest prevailing shares of their funds in alternative assets. Furthermore, only for Estonia and Slovenia, the CEE countries with highest involvement of banks in credit supply, the distribution of the *loans to total assets* variable indicates levels of lending activity that are higher than those of Greek banks. Only in these two countries do the majority of banks invest predominantly (more than 60% of their assets) in loans. In Hungary and Poland the prevailing share of banks invests between 40% and 60% of their assets as loans, a feature that resembles the Greek banking sector. For all other CEE countries (Bulgaria, the Czech Republic, Latvia, Lithuania, Romania and Slovakia) the majority of banks invest less than 40% of their assets in loans. In these countries only very few banks distribute more than 60% of their assets as loans, which signals the importance of alternative assets in bank portfolios.

The results from this section confirm the hypothesis that not only the smaller size of the banking industry, but also the fact that existing banks invest in alternative assets instead of supplying credit, explains the low levels of bank loan supply. In order to illustrate the importance of the alternative investments in the asset portfolio of banks we present the distributions of the variables *assets in form of government securities to total assets* and *deposits with banks to total assets*.

The distribution of the variable *assets in form of government securities to total assets*, presented in Figures A.15. to A.23 in the Appendix, indicates that investment in government securities represents a substantial share of assets in Bulgaria (especially in the early transition period), Hungary, Lithuania, Poland and Slovakia<sup>26</sup>. In Bulgaria, Hungary, Lithuania and Slovakia almost half of the banks, and in Poland even more than 80% of the banks, invest more than 10% of their assets in government securities. In the developed EU financial systems this is done by less than 5% of the banks.

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<sup>26</sup> Data for bank investments in government securities in the Czech Republic, Estonia, Latvia and Romania is not available

All CEE countries, but Poland, have recently experienced periods of severe government deficits. These deficits have mostly been financed by government bonds which represented a profitable risk adjusted investment alternative for banks. Furthermore, all CEE countries had wide-ranging consolidation programs<sup>27</sup> that swapped bad bank loans for government securities. The effects of these consolidation programs can be seen in the high share of government securities in bank assets. The implementation of consolidation programs is marked by an increase in the share of banks that invest more than 10% of their assets in government securities (i.e. Hungary and Poland in 1994).

The literature on transition banking points to the possibility that the high share of government bonds in bank assets can generate crowding-out effects (Anderson and Kegels, 1998). The lack of loan demand data does not allow us to prove the relevance of this hypothesis. Nevertheless, an alternative argument can be mentioned here. In CEE countries, government debt is intermediated by the banking sectors, whereas in countries with stronger investment tradition the public directly holds government securities and these are not reflected on bank balance sheets. This means that banks in CEE countries undertake functions that are performed by capital markets in mature market economies. This implies that banks increase in size due to reasons not directly associated with typical banking functions like credit assessment and monitoring.

The distribution of *deposits with banks to total assets*, presented in Figures A.24 to A.35 in the Appendix, show that a large proportion of banks in Bulgaria, the Czech Republic, Poland, Romania and Slovakia hold a substantial share of assets in the form of deposits with other banks.

On the liability side, significant differences among the distribution of the variable *customer deposits to total deposits* across the EU benchmark countries is observed. In Germany and Greece most of the banks rely predominantly on funds gathered in the customer deposit market. In contrast, funding through the interbank market has a much higher importance for

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<sup>27</sup> in the case of Hungary and Poland multiply repeated

Dutch banks<sup>28</sup>. As reflected in Figures A.36 to A.48 in the Appendix we also observe significant differences among the CEE countries. In the Czech Republic, Hungary, Poland and Slovakia interbank deposits are an important source of refinancing for the vast majority of banks.

On the other hand, in Estonia, Latvia, Lithuania<sup>29</sup>, Romania and Slovenia the distribution of the variable *customer deposits to total deposits* shows that almost all banks are fully financed by customer deposits. A low ratio of customer deposits to total deposits ratio is observed only temporary in periods of instability of the financial system (e.g. Latvia in 1995-1996, Romania in 1997-98). This stems from the fact that central bank liquidity assistance is reflected in the balance sheets as interbank deposit. The distributions of the variable customer deposits to total deposits for the CEE countries are otherwise similar to the ones of German and Greek banks. They indicate a relative low importance of interbank deposits on the liability side of bank balance sheets. In these CEE countries all banks participate in the deposit market under similar conditions and the incentives for interbank borrowing are limited. Bulgarian banks showed a relatively low involvement in deposit collecting activities during the mid-1990s, but later this pattern changes and by 2001 most banks finance their assets almost exclusively by customer deposits.

The distribution of the variables measuring financial intermediation productivity of banks point to both, differences across CEE countries, and differences across banks within the respective banking systems. These results comply with the specialization argument made by some studies on banking in CEE countries. Large incumbent banks in CEE countries specialize in deposit gathering, whereas loan supply is mostly provided by new entrant banks. This phenomenon has been described by Miller and Petranov (2002) for the early transition period in Bulgaria and by Bonin et. al. (1998) for the Czech Republic and Hungary. The

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<sup>28</sup> As evidenced by De Bandt and Davis (1999) the low level of customer deposits in the Netherlands is a phenomenon of the 1990s. The reason is that bank deposits became less attractive during the 1990s due to the higher returns in investment in shares and mutual funds. This low level of customer deposits is compensated for by deposits from foreign banks.

<sup>29</sup> After the Baltic countries' became independent from the USSR the assets of the local Sberbank subsidiaries were never recovered from the legal successor of Sberbank in Moscow<sup>29</sup>. This is analogous to the situation in Slovenia (Bonin, et. al., 1998).



existence of such specialization explains the high share of interbank borrowing by CEE banks, because banks clear the systematic inequalities between deposits and loans through interbank trade.

**Table 13: Loans to total assets, weighted average by groups of banks, in %**

		1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	three largest banks	72	40	46	27	22	22	22	25
	small banks	41	35	13	21	30	36	37	39
<b>Czech Republic</b>	three largest banks	47	45	46	48	44	37	29	29
	small banks	59	52	54	49	47	39	33	35
<b>Estonia</b>	three largest banks	40	43	52	53	57	57	58	55
	small banks	41	45	48	48	61	50	48	55
<b>Hungary</b>	three largest banks	33	31	31	33	34	35	43	47
	small banks	41	40	39	41	39	46	53	53
<b>Latvia</b>	three largest banks	36	27	34	37	51	49	50	56
	small banks	28	23	17	21	39	38	27	34
<b>Lithuania</b>	three largest banks	54	59	50	42	40	45	40	41
	small banks	55	46	34	33	44	46	48	43
<b>Poland</b>	three largest banks	24	24	25	28	30	42	44	40
	small banks	33	39	44	47	49	52	49	49
<b>Romania</b>	three largest banks	35	46	51	43	31	23	24	29
	small banks	60	56	56	38	35	31	35	37
<b>Slovakia</b>	three largest banks	45	41	44	43	46	47	43	22
	small banks	66	59	56	48	41	48	43	49
<b>Slovenia</b>	three largest banks	52	37	39	41	47	51	51	47
	small banks	43	53	46	44	49	55	54	52

Source: Own calculations based on BankScope data

To present more evidence supporting this phenomenon we look at the differences among the financial intermediation performance of different groups of banks. We divide the sample of banks covered by BankScope into two groups. The first includes the three largest banking institution in terms of total assets, and the second includes the remaining “small” banks. Table A.2 and A.3 in the Appendix illustrate that in Bulgaria, the Czech Republic, Hungary, Poland, and Slovakia all large banks are incumbent institutions. In newly independent economies like Estonia, Latvia, Lithuania and Slovenia, in contrast, incumbent banks did not exist and new entrants managed to acquire a dominant position in the banking market.

Table 13 and Table 14 illustrate that the largest incumbent banking institutions do indeed perform different activities when compared with the rest of the banking sectors in Bulgaria, the Czech Republic, Hungary, Poland and Slovakia. So for example, the ratio of loans to total assets in the Czech Republic and Hungary is on average 10% higher for small banks than for the large banks. In Poland and Slovakia small banks have a ratio of loans to total assets that is even about 20% higher than the one for the largest banks. On the liability side, large banks in

the Czech Republic, Hungary, Poland and Slovakia almost exclusively finance their activities by customer deposits, whereas customer deposits represent only 50-70% of the total deposit in small banks. Thus up to 50% of small banks' deposits represent interbank financing.

These differences cannot be explained by the size of the banks alone, since in countries where dominant banks are new entrant institutions (Estonia, Latvia, Lithuania, and Slovenia) this phenomenon of specialization is not observed.

**Table 14: Customer deposits to total deposits, weighted average by groups of banks, in %**

		1994	1995	1996	1997	1998	1999	2000	2001
<b>Bulgaria</b>	three largest banks	24	66	53	85	91	95	98	98
	small banks	74	89	88	89	88	89	88	87
<b>Czech Republic</b>	three largest banks	83	80	80	80	81	86	91	91
	small banks	59	62	65	65	73	73	59	63
<b>Estonia</b>	three largest banks	96	86	83	75	79	81	88	92
	small banks	90	73	76	72	59	69	83	84
<b>Hungary</b>	three largest banks	85	86	87	88	86	91	89	92
	small banks	57	67	67	62	63	69	68	69
<b>Latvia</b>	three largest banks	87	98	95	86	76	78	86	83
	small banks	88	89	82	86	79	81	84	84
<b>Lithuania</b>	three largest banks	84	92	91	88	83	84	86	87
	small banks	81	83	73	86	78	85	80	75
<b>Poland</b>	three largest banks	92	95	94	94	100	93	91	91
	small banks	73	71	67	70	72	72	71	78
<b>Romania</b>	three largest banks	59	50	51	60	86	86	90	91
	small banks	78	84	92	89	85	83	86	89
<b>Slovakia</b>	three largest banks	72	81	84	86	87	88	93	93
	small banks	48	53	50	50	54	58	61	80
<b>Slovenia</b>	three largest banks	83	86	87	89	86	84	84	82
	small banks	89	89	88	90	90	88	87	85

Source: Own calculations based on BankScope data

In general the small banks in those CEE sample countries where incumbents still dominate the deposit market rely heavily on interbank funds. This supports the notion of specialization within the banking sector. The process of channeling funds from savers to investors in the economy contains an additional chain of transferring funds from a few banks possessing access to a wide range of customers to those banks that have not developed a customer deposit network, but have potential projects to finance.

One immediate result of the specialization phenomenon is that the average ratio measuring financial intermediation productivity of banks is relatively low, since some banks are not involved in loan supply, whereas others do not gather deposits.

To summarize, the micro level analysis on the financial intermediation productivity of CEE banks indicates that the low aggregate levels of bank intermediation are a reflection of the low financial intermediation productivity. This is especially true with regard to the loan supply function; banks in all CEE countries are less involved in loan supply than banks from the EU benchmark countries. Moreover, a phenomenon of specialization of large incumbents in deposit gathering and of new entrants in loan supply is observed in some of the CEE countries (Bulgaria, the Czech Republic, Hungary, Poland and Slovakia). As a result ratios measuring the aggregate financial intermediation productivity of banks are biased downwards, since some banks are not involved in loans supply, whereas others do not gather deposits.

## **6. Conclusion**

This paper presents an analysis of the size of the banking sectors in Central and Eastern European (CEE) countries. We focus on the banking sectors' ability to provide financial intermediation between savers and investors in the economy.

The existing literature on banking in transition economies argues in unison that banking sectors in CEE countries are too small and do not provide sufficient levels of financial intermediation. In this paper we detect a common drawback of the existing measures used to indicate the size of CEE banking sectors: they all relate the volume of bank intermediation to GDP. We argue that since transition economies have a low stock of financial wealth relative to economic activity, a more objective measure of the size of the banking sector is the ratio of bank assets to a proxy of the stock of financial wealth rather than to GDP. Indeed, we find evidence that the estimation of the size of the banking sectors relative to GDP produce downward biased measures for the ability of CEE banks to intermediate available financial resources. But even when the size of the banking sector is measured relative to financial wealth, a gap between the developed EU banking systems and those of the CEE countries exists. But this gap is not as severe as argued in studies based on the traditional approach of measuring the size of the banking system with respect to GDP.

This paper, moreover, focuses on three arguments proposed in the literature that help explain the low level of financial intermediation by banks in CEE countries.

First, we find that the low current level of bank intermediation can at least partly be explained by the low initial stage of development of CEE banking sectors. By comparing the levels of marginal intermediation of the CEE countries with those of the EU countries, we conclude that catching up with the EU levels is progressing, at least with regard to the CEE banks' ability to accumulate deposits. Regarding to the lending function of the banking sectors, a trend towards approaching EU levels could be observed during the early transition years but was interrupted in the late 1990s.

Second, comparing the capital markets of CEE countries with those of the EU benchmarks, we reject the hypothesis that the development of banking sectors has been insufficient because financial systems are developing in a market-based manner. The data illustrate that capital markets in all CEE countries are even more severely underdeveloped than banking sectors. Therefore, they cannot compensate for the low level of bank financial intermediation.

Finally, when analyzing the involvement of CEE banks in classical financial intermediation activities on a micro level we find evidence for the hypothesis that the low level of financial intermediation provided by CEE banking sectors is a reflection of the low financial intermediation productivity of CEE banks on the individual bank level. Furthermore, our data indicate that significant differences across banks in some of the CEE countries exist. Whereas some banks do not perform credit, others show only minor involvement in deposit gathering. We relate this heterogeneity to a phenomenon of bank specialization in some CEE countries that has previously been described in the literature. A comparison between the financial intermediation activities of the largest banks with those of the small institutions supports the argument that in countries where incumbent banks still dominate the deposit market, there is a specialization of large incumbents in deposit gathering and of new entrant banks in credit supply.

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## Appendix

Table A.1: Data sources

Variable	Data Source
Bank assets to GDP	IFS
Bank claims to the private sector to GDP	IFS
Deposits with banks to GDP	IFS
Stock market capitalization to GDP	Transition Report for CEE countries, Datastream for EU benchmarks
Domestic debt securities to GDP	Bank for International Settlements
Loans to total assets	BankScope
Deposits with banks to total assets	BankScope
Investment in government securities to total assets	BankScope
Customer deposits to total deposits	BankScope



**Table A.2: Main deposit gathering banks in CEE: shares in deposit market**

Bank	Incumbent	Customer deposit market share in							
		1994	1995	1996	1997	1998	1999	2000	2001
BULBANK	yes	12%	12%	24%	28%	20%	27%	29%	30%
DSK	yes	45%	37%	24%	30%	28%	26%	25%	25%
United Bulgarian Bank	yes	14%	9%	6%	11%	10%	13%	15%	17%
Ceska Sporitelna	yes	39%	32%	26%	26%	26%	28%	29%	26%
Ceskoslovenska Obchodni Banka	yes	8%	9%	8%	10%	9%	11%	28%	28%
Komercni Banka	yes	27%	25%	23%	24%	20%	22%	23%	22%
Estonian Savings Bank	yes	35%	28%	23%	19%	-	-	-	-
Eesti Uhispank	no	36%	20%	22%	21%	29%	27%	23%	24%
HansaBank	no	10%	28%	32%	29%	60%	64%	68%	68%
Hungarian Foreign Trade Bank	yes	6%	6%	7%	8%	8%	8%	8%	9%
K&H Bank	yes	10%	9%	9%	9%	10%	14%	14%	14%
National Savings and Commercial Bank	yes	55%	49%	44%	39%	40%	34%	30%	31%
Hansabanka	no	5%	8%	12%	17%	20%	22%	22%	24%
Latvijas Unibanka	no	23%	25%	24%	24%	34%	31%	28%	25%
Parekss Banka	no	27%	22%	24%	24%	34%	37%	33%	28%
AB Bankas Hansa	no	-	26%	24%	30%	39%	43%	33%	33%
Agricultural Bank of Lithuania	yes	22%	20%	21%	20%	17%	17%	13%	13%
Commercial Bank of Lithuania	yes	46%	24%	20%	-	-	-	-	-
Vilniaus Bankas	no	18%	7%	15%	21%	21%	29%	41%	41%
Bank Pekao	yes	14%	13%	15%	15%	12%	13%	13%	15%
Bank Przemyslowo-Handlowy PBK	yes	4%	6%	5%	7%	8%	10%	11%	13%
Powszechna Kasa Oszczednosci BP	yes	24%	32%	30%	27%	34%	25%	28%	28%
Banca Comerciala Romana	no	8%	12%	12%	13%	28%	34%	29%	35%
BANCOREX	yes	79%	66%	71%	54%	23%	-	-	-
Romanian Savings Bank	yes	10%	8%	10%	11%	13%	14%	11%	-
Slovak Savings Bank	yes	49%	46%	43%	41%	36%	34%	32%	31%
Tatra Banka	no	3%	5%	7%	7%	7%	9%	12%	15%
Vseobecna Uverova Banka	yes	33%	32%	30%	29%	26%	26%	25%	25%
Nova Kreditna Banka Maribor	yes	22%	18%	13%	10%	16%	16%	18%	16%
Nova Ljubljanska Banka	no	23%	21%	20%	21%	46%	45%	48%	47%
SKB Banka DD	no	7%	10%	10%	9%	14%	13%	14%	14%

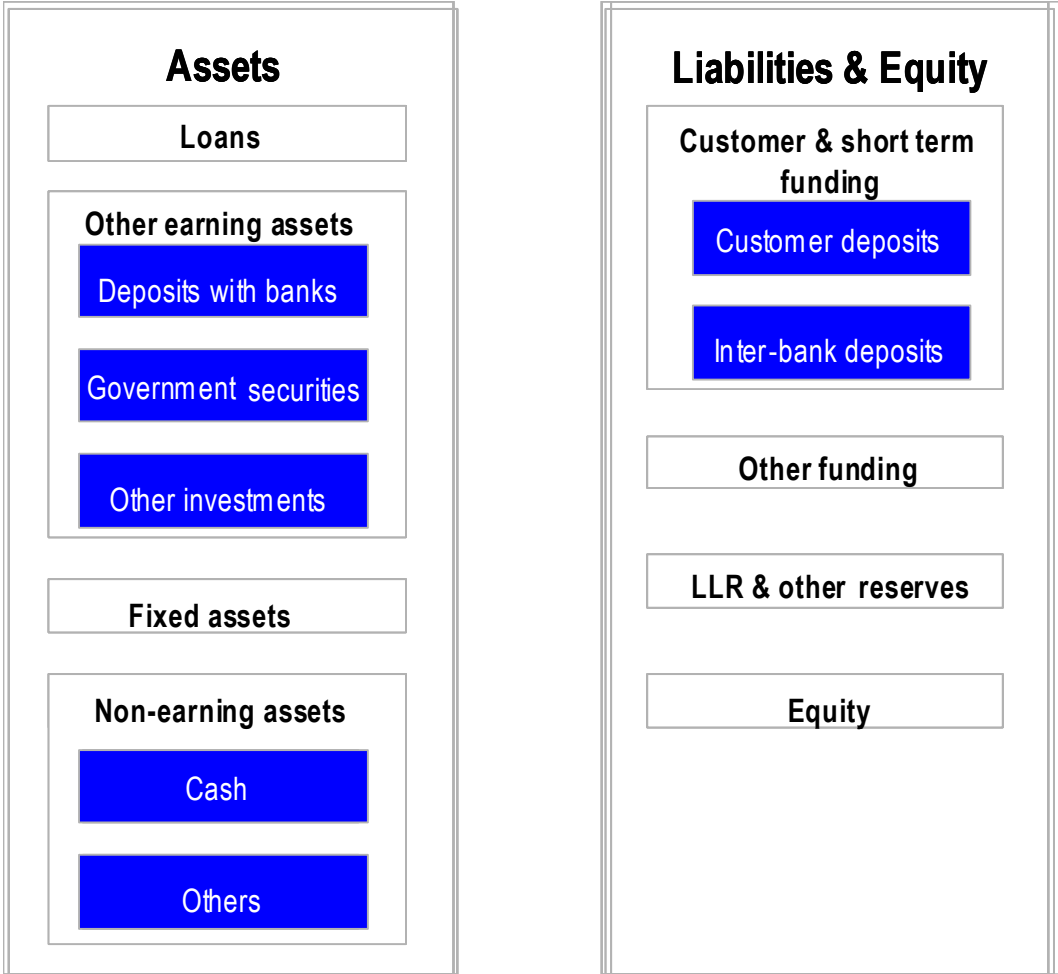
Source: Own calculations based on Bankscope and IFS

**Table A.3: Main deposit gathering banks in CEE: shares in total assets of the banking system**

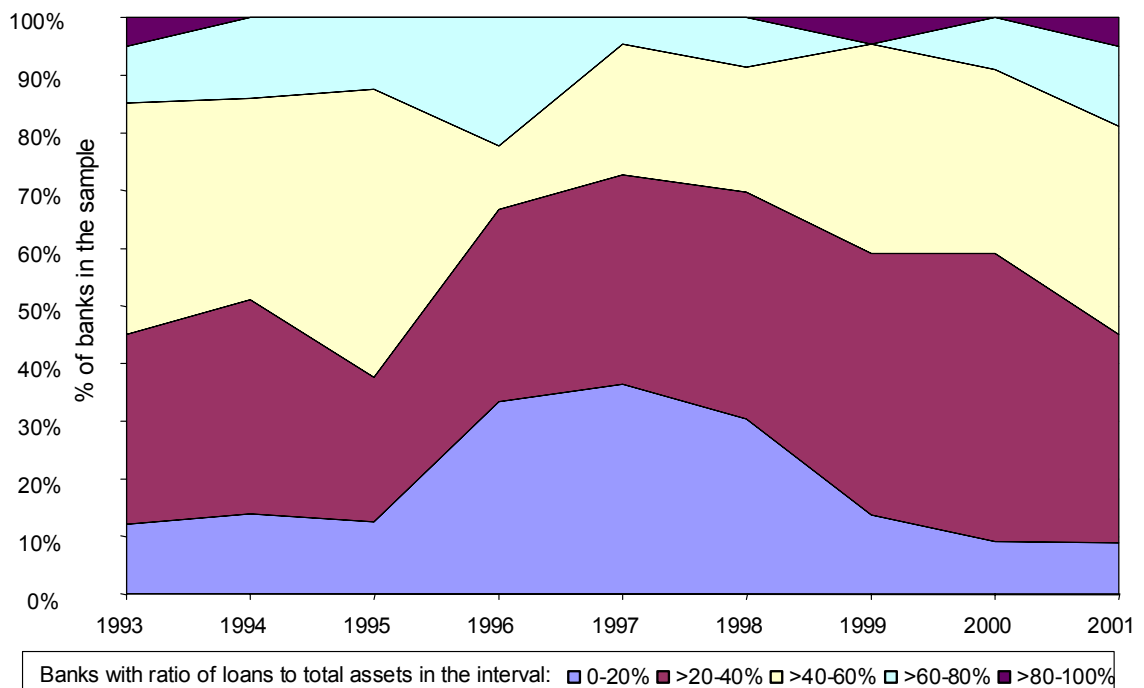
Bank	Incumbent	Share in total assets of the banking system							
		1994	1995	1996	1997	1998	1999	2000	2001
BULBANK	yes	29%	27%	40%	36%	30%	30%	27%	25%
DSK	yes	20%	21%	14%	12%	13%	14%	14%	15%
United Bulgarian Bank	yes	8%	7%	8%	11%	12%	13%	13%	15%
Ceska Sportelna	yes	20%	20%	18%	19%	19%	19%	20%	20%
Ceskoslovenska Obchodni Banka	yes	12%	12%	11%	12%	12%	13%	23%	23%
Komerčni Banka	yes	22%	23%	22%	22%	19%	19%	19%	18%
Estonian Savings Bank	yes	21%	21%	18%	18%	-	-	-	-
Eesti Uhispank	no	23%	17%	16%	20%	25%	23%	17%	17%
HansaBank	no	8%	23%	30%	30%	58%	58%	61%	65%
Hungarian Foreign Trade Bank	yes	9%	9%	9%	8%	10%	9%	10%	10%
K&H Bank	yes	11%	10%	9%	8%	8%	13%	13%	12%
National Savings and Commercial Bank	yes	31%	30%	30%	26%	26%	24%	23%	23%
Hansabanka	no	6%	9%	13%	19%	23%	24%	24%	26%
Latvijas Unibanka	no	21%	23%	23%	22%	28%	26%	26%	26%
Parekss Banka	no	26%	25%	25%	23%	28%	33%	31%	30%
AB Bankas Hansa	no	-	28%	27%	29%	34%	38%	40%	39%
Agricultural Bank of Lithuania	yes	20%	18%	18%	18%	16%	16%	12%	11%
Commercial Bank of Lithuania	yes	42%	23%	19%	-	-	-	-	-
Vilniaus Bankas	no	20%	17%	16%	18%	19%	19%	41%	41%
Bank Pekao	yes	16%	14%	12%	12%	17%	18%	17%	18%
Bank Przemyslowo-Handlowy PBK	yes	6%	8%	7%	7%	8%	13%	15%	15%
Powszechna Kasa Oszczednosci BP	yes	22%	20%	20%	20%	24%	19%	20%	21%
Banca Comerciala Romana	no	10%	11%	12%	12%	24%	31%	29%	32%
BANCOREX	yes	76%	62%	60%	52%	21%	-	-	-
Romanian Savings Bank	yes	8%	7%	7%	7%	8%	10%	9%	-
Slovak Savings Bank	yes	41%	41%	39%	36%	32%	32%	27%	27%
Tatra Banka	no	3%	6%	8%	7%	8%	9%	13%	16%
Vseobecna Uverova Banka	yes	30%	29%	29%	26%	23%	24%	22%	22%
Nova Kreditna Banka Maribor	yes	22%	18%	13%	9%	15%	14%	16%	18%
Nova Ljubljanska Banka	no	22%	22%	22%	21%	40%	45%	48%	42%
SKB Banka DD	no	8%	9%	8%	9%	13%	13%	14%	13%

Source: Own calculations based on Bankscope and IFS

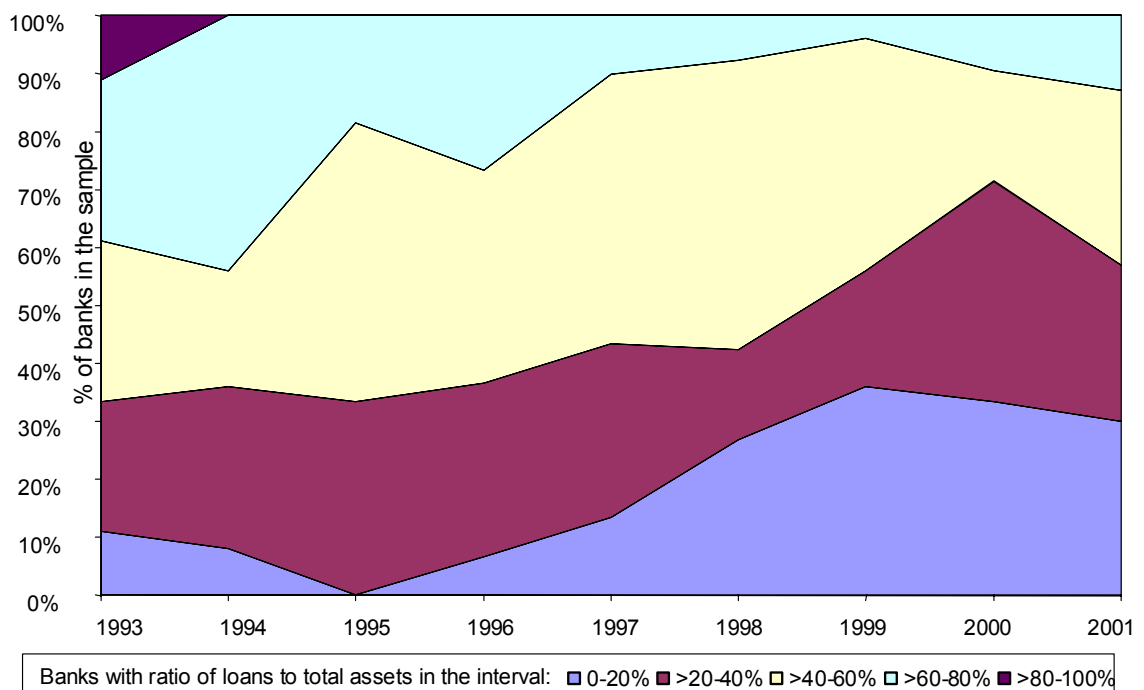
Figure A.1: Structure of bank balance sheet in BankScope



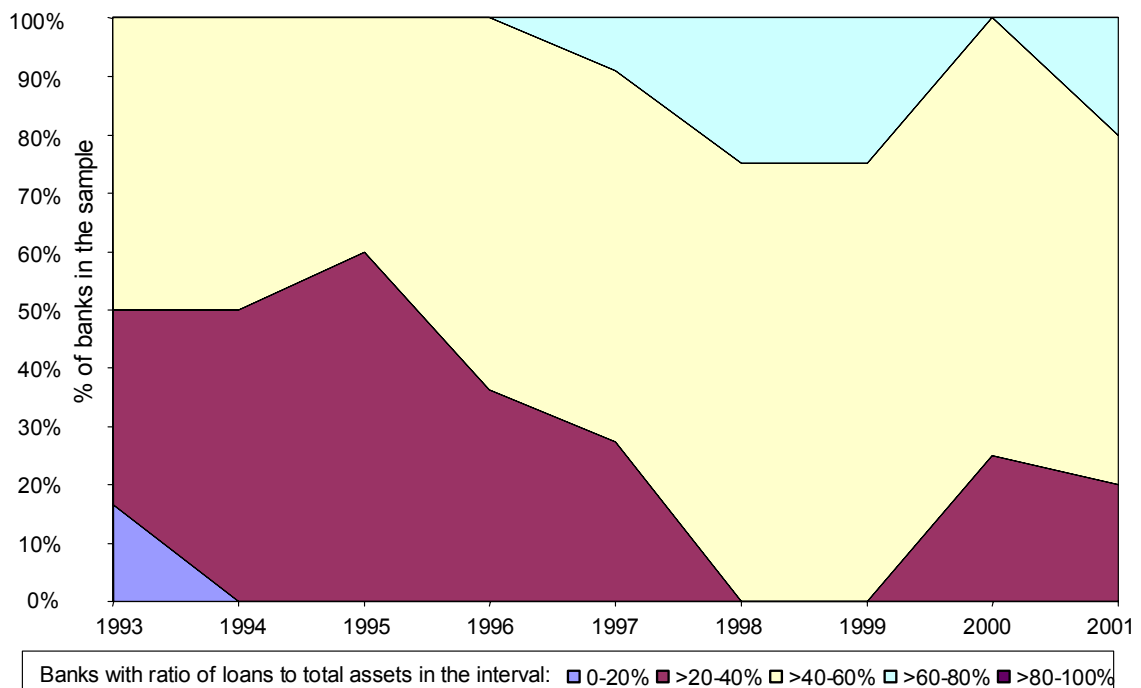
**Figure A.2: Distribution of variable loans to total assets for the Bulgarian banks, 1995-2001**



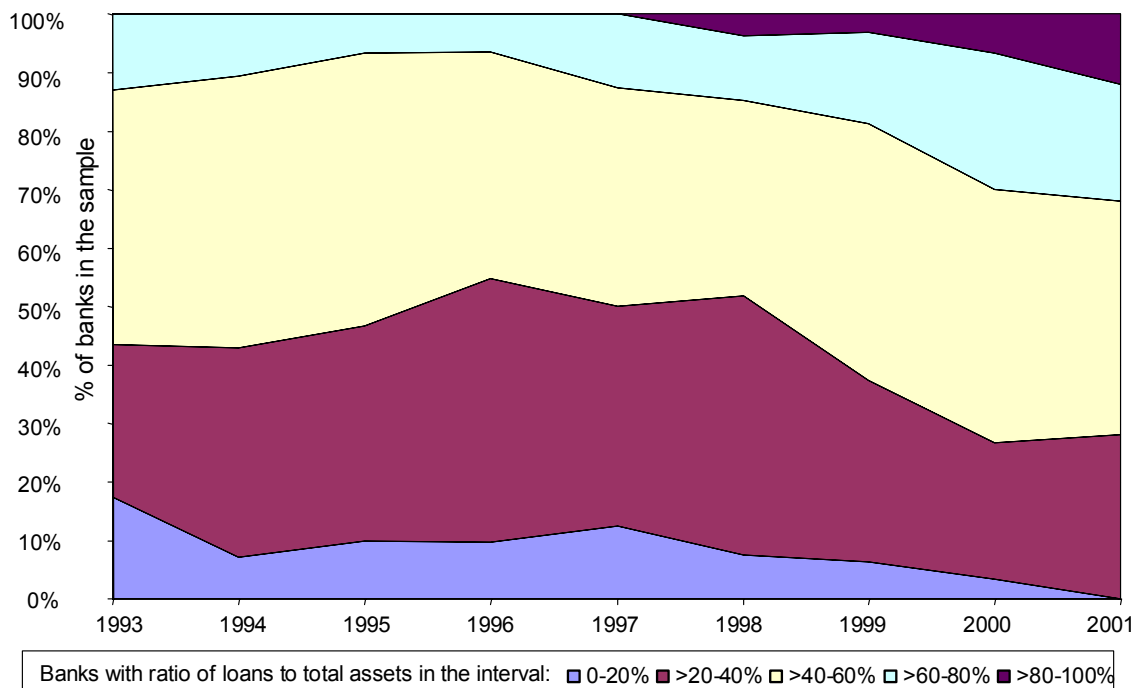
**Figure A.3: Distribution of variable loans to total assets for the Czech banks, 1995-2001**



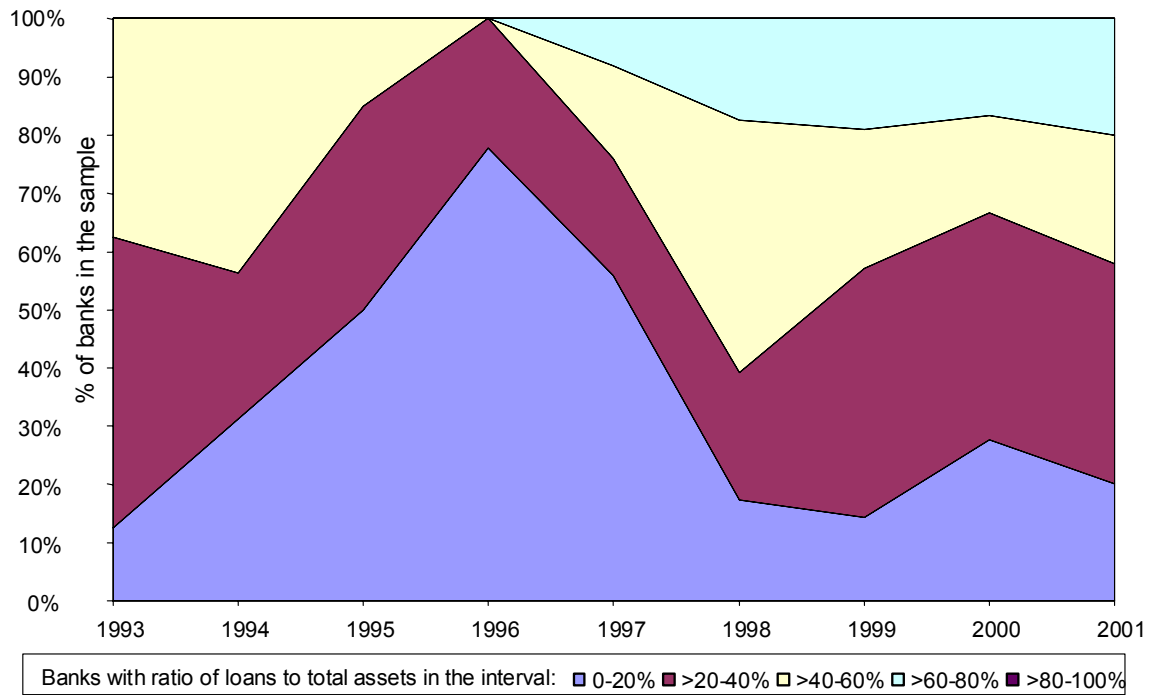
**Figure A.4: Distribution of variable loans to total assets for the Estonian banks, 1993-2001**



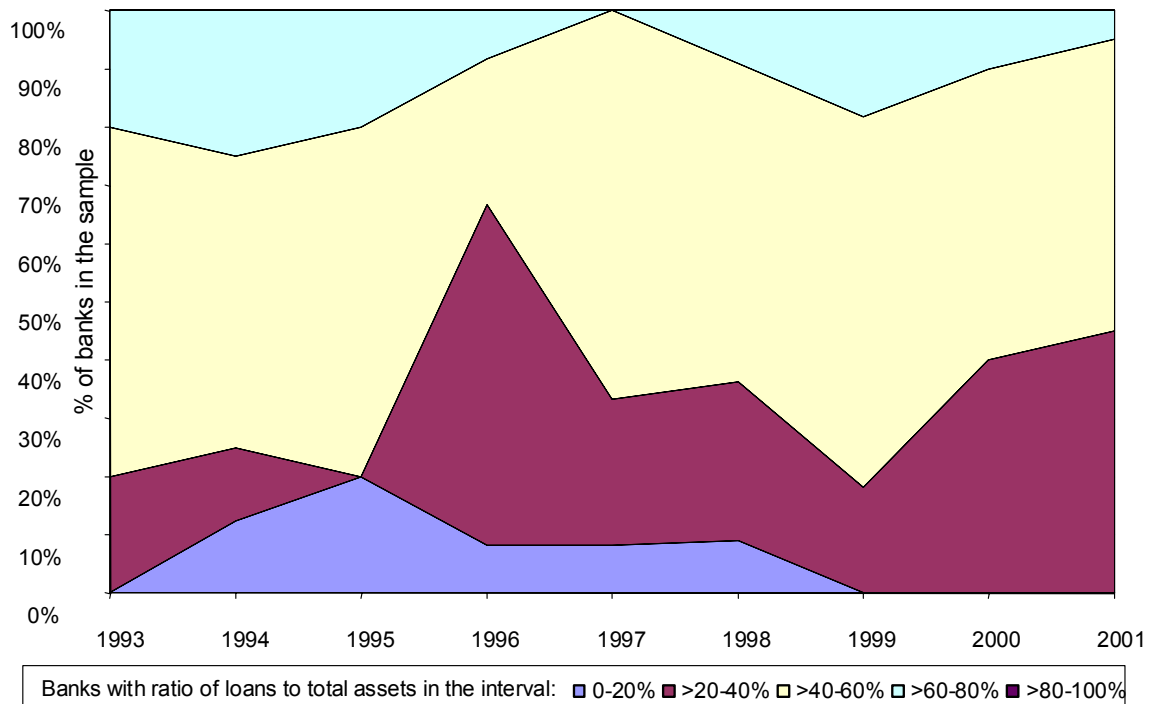
**Figure A.5: Distribution of variable loans to total assets for the Hungarian banks, 1993-2001**



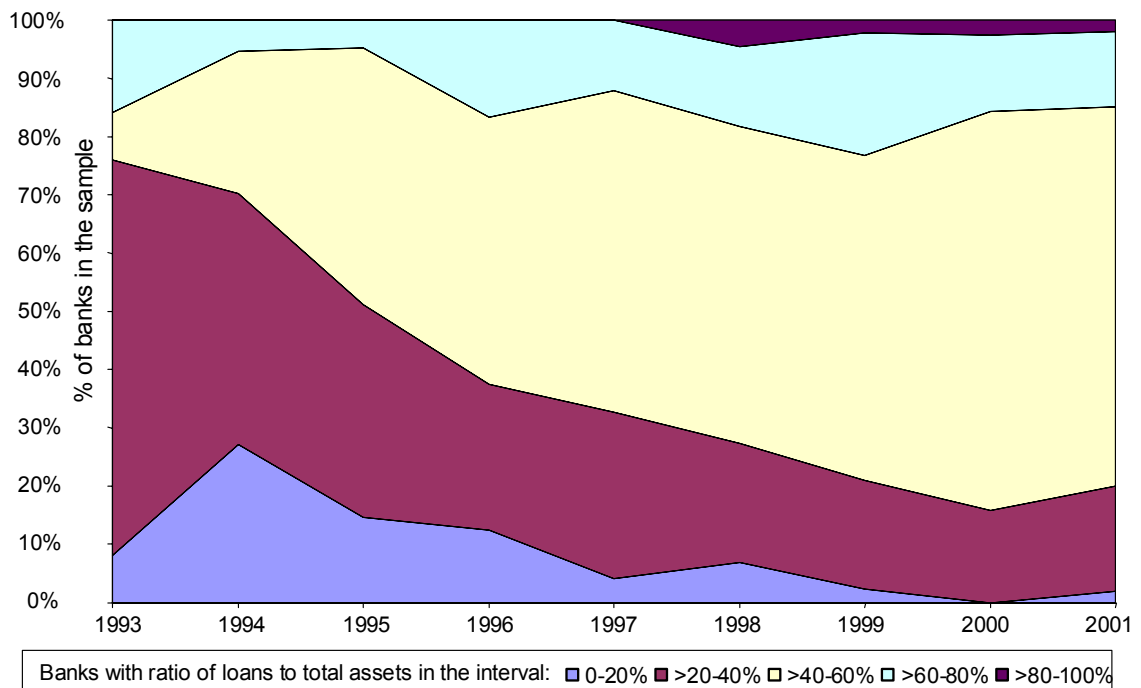
**Figure A.6: Distribution of variable loans to total assets for the Latvian banks, 1993-2001**



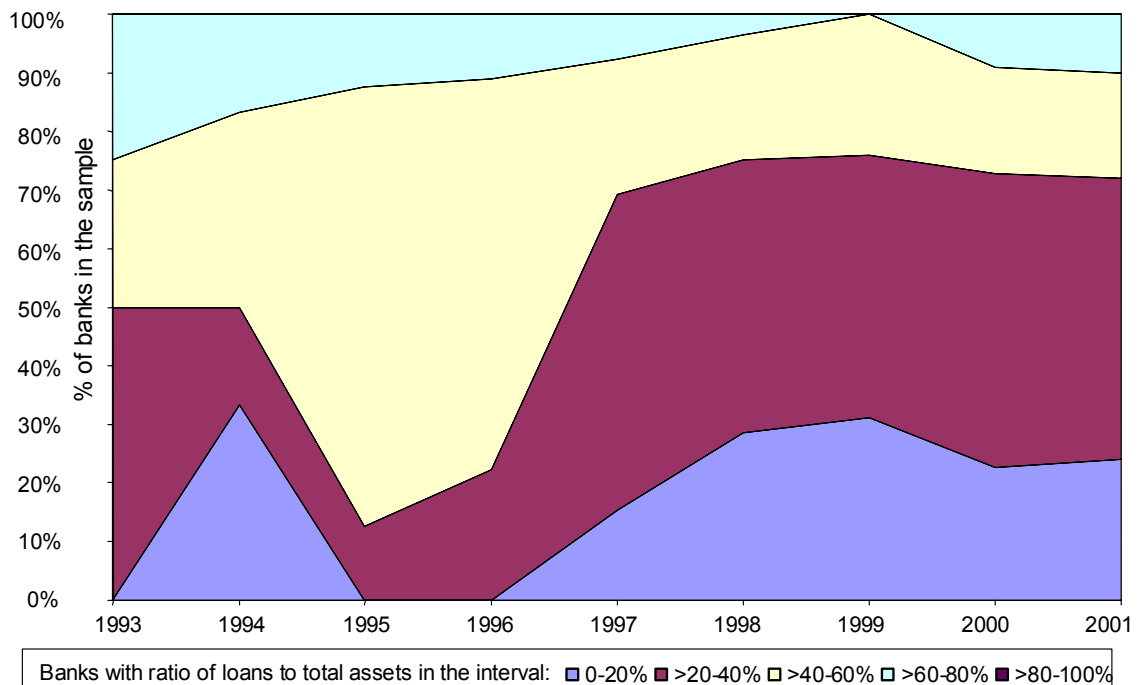
**Figure A.7: Distribution of variable loans to total assets for the Lithuanian banks, 1993-2001**



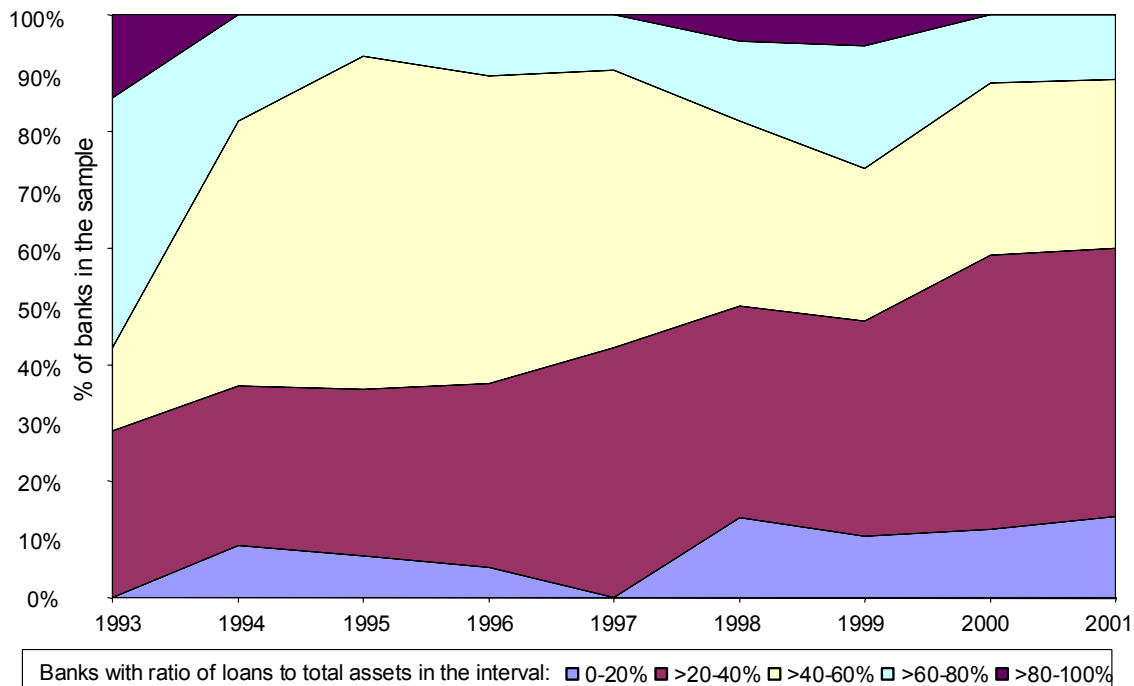
**Figure A.8: Distribution of variable loans to total assets for the Polish banks, 1993-2001**



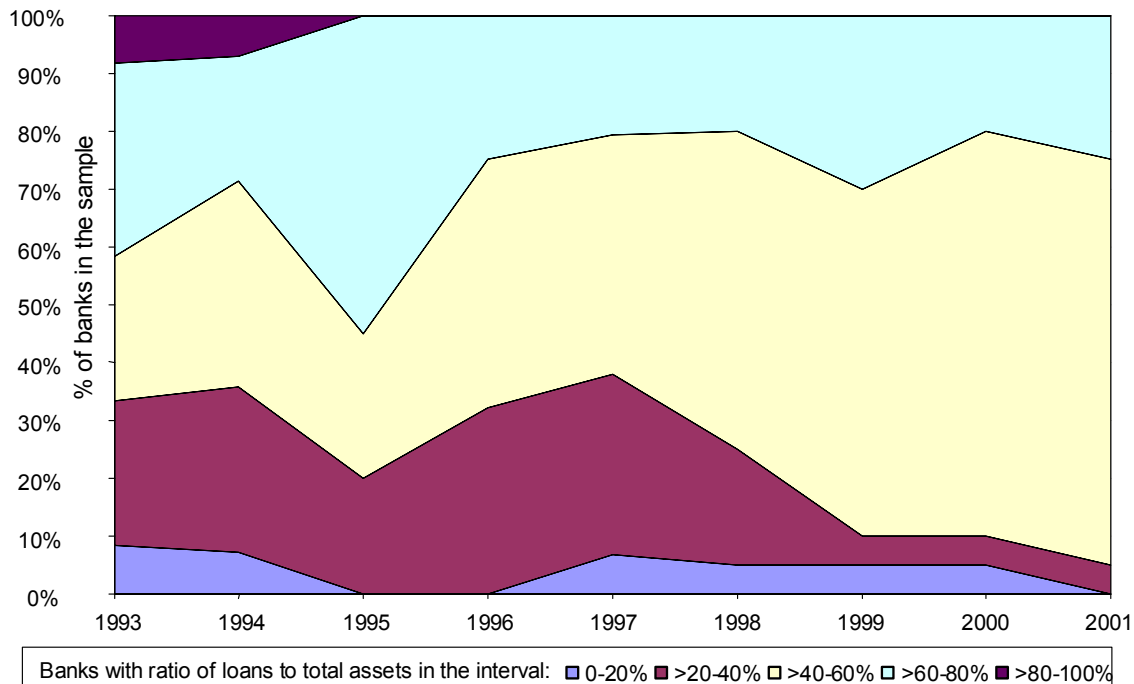
**Figure A.9: Distribution of variable loans to total assets for the Romanian banks, 1993-2001**



**Figure A.10: Distribution of variable loans to total assets for the Slovakian banks, 1993-2001**

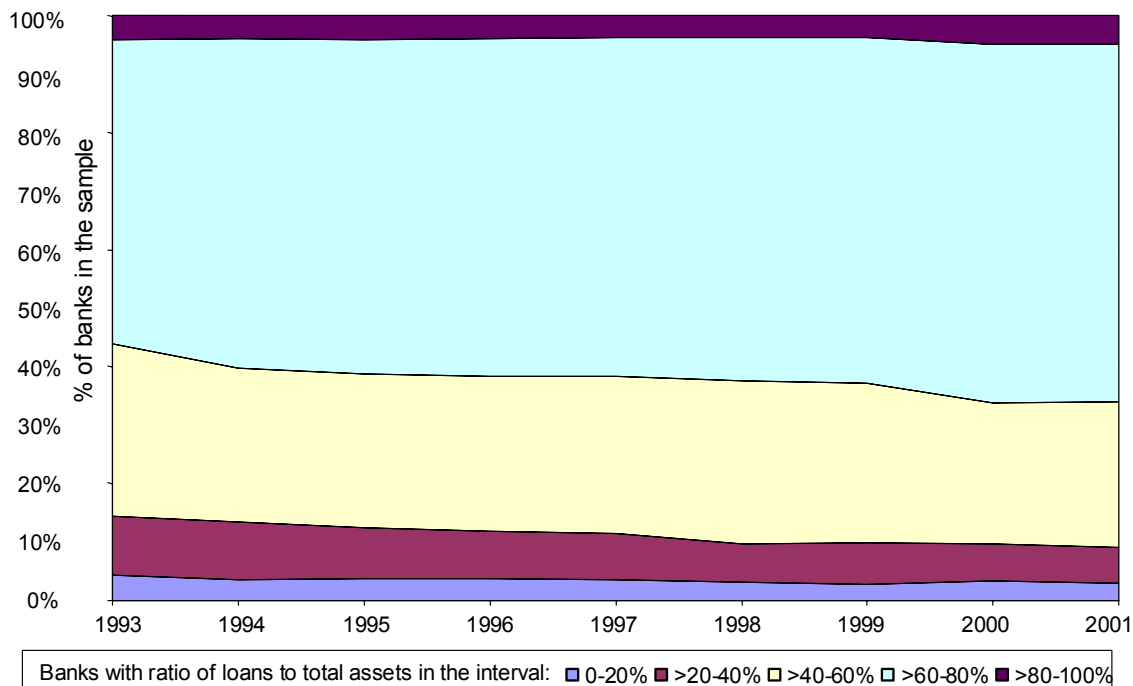


**Figure A.11: Distribution of variable loans to total assets for the Slovenian banks, 1993-2001**

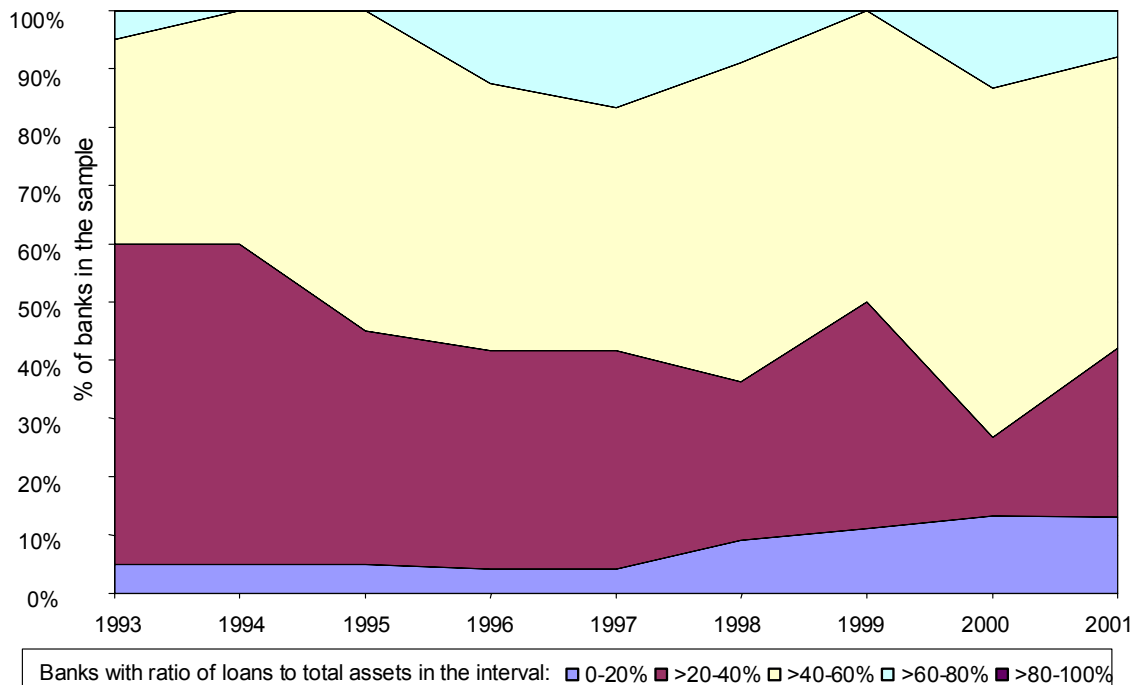




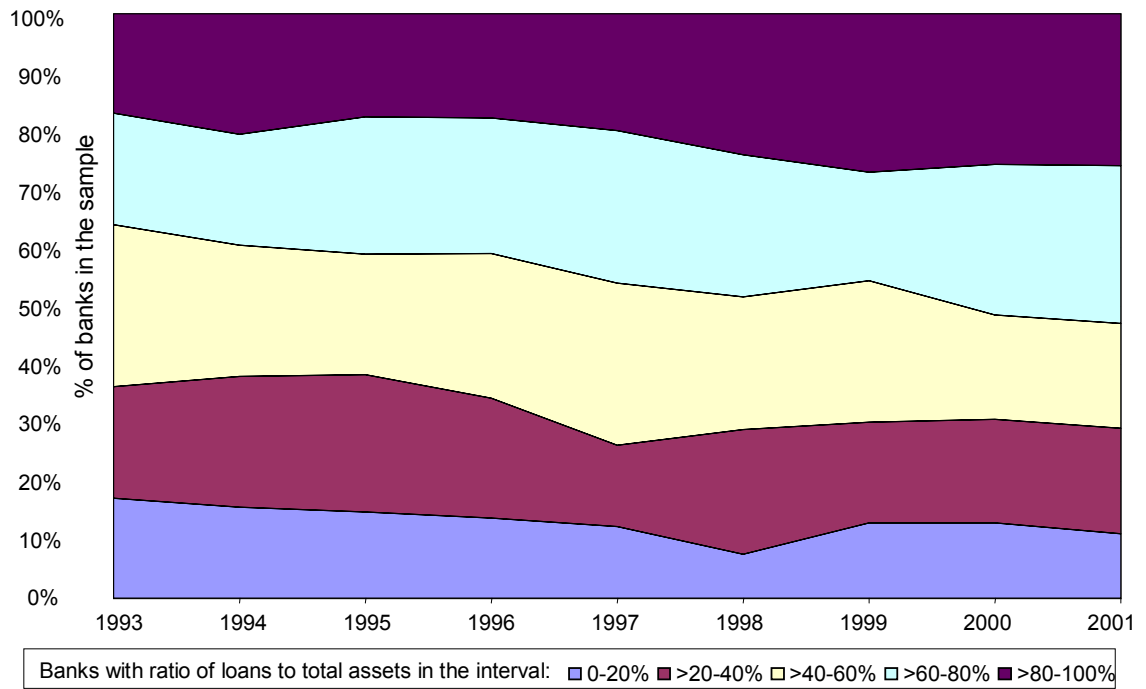
**Figure A.12: Distribution of variable loans to total assets for the German banks, 1993-2001**



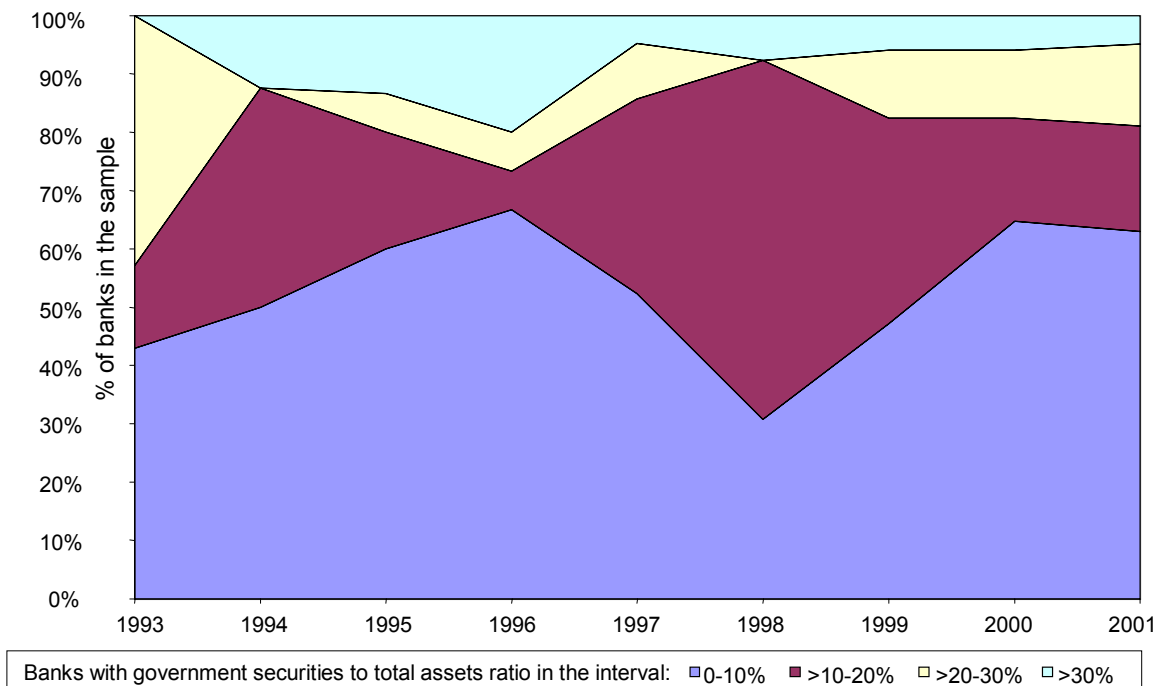
**Figure A.13: Distribution of variable loans to total assets for the Greek banks, 1993-2001**



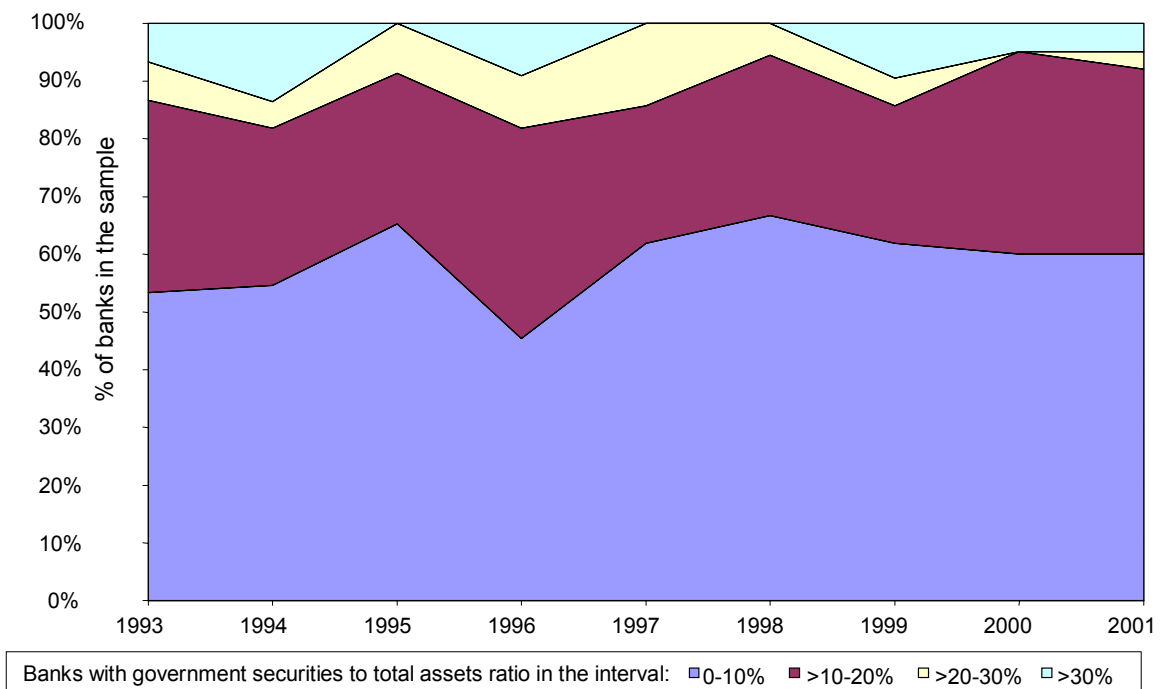
**Figure A.14: Distribution of variable loans to total assets for the Dutch banks, 1993-2001**



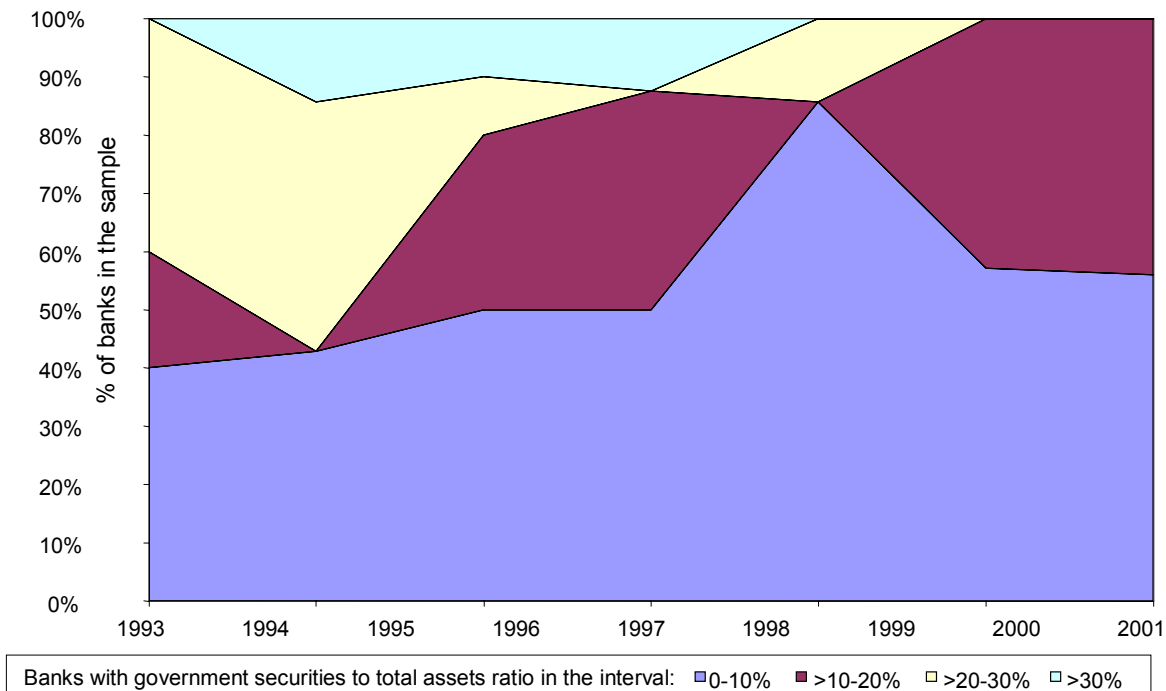
**Figure A.15: Distribution of variable government securities to total assets for Bulgarian banks, 1993-2001**



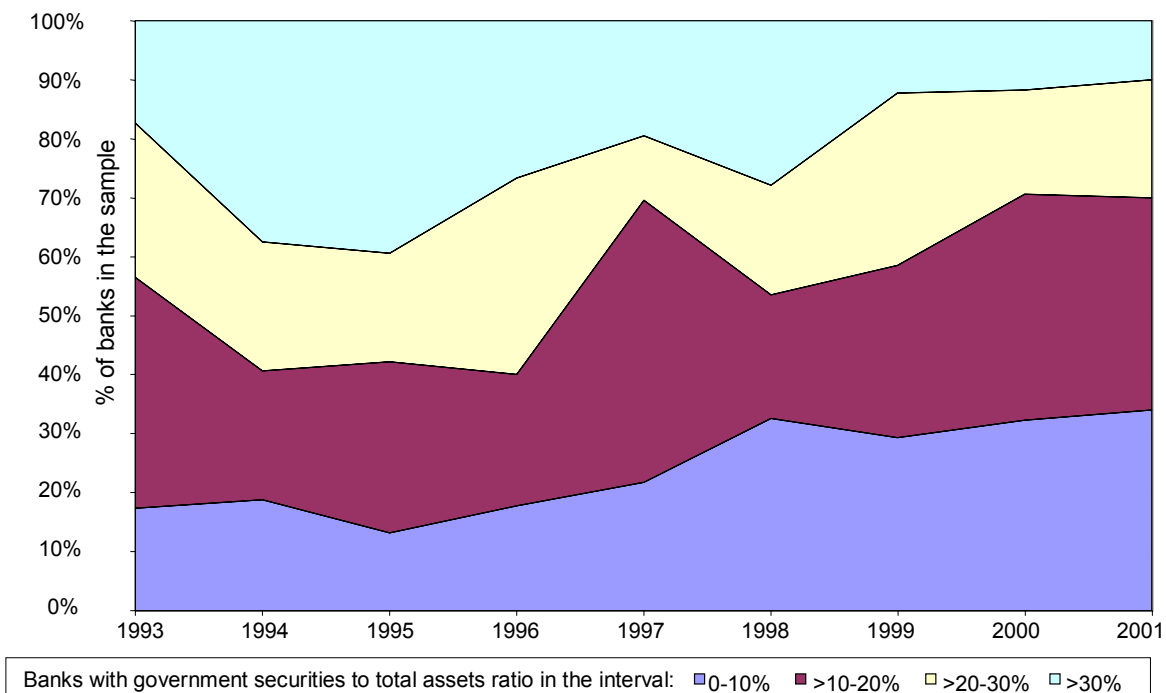
**Figure A.16: Distribution of variable government securities to total assets for Hungarian banks, 1993-2001**



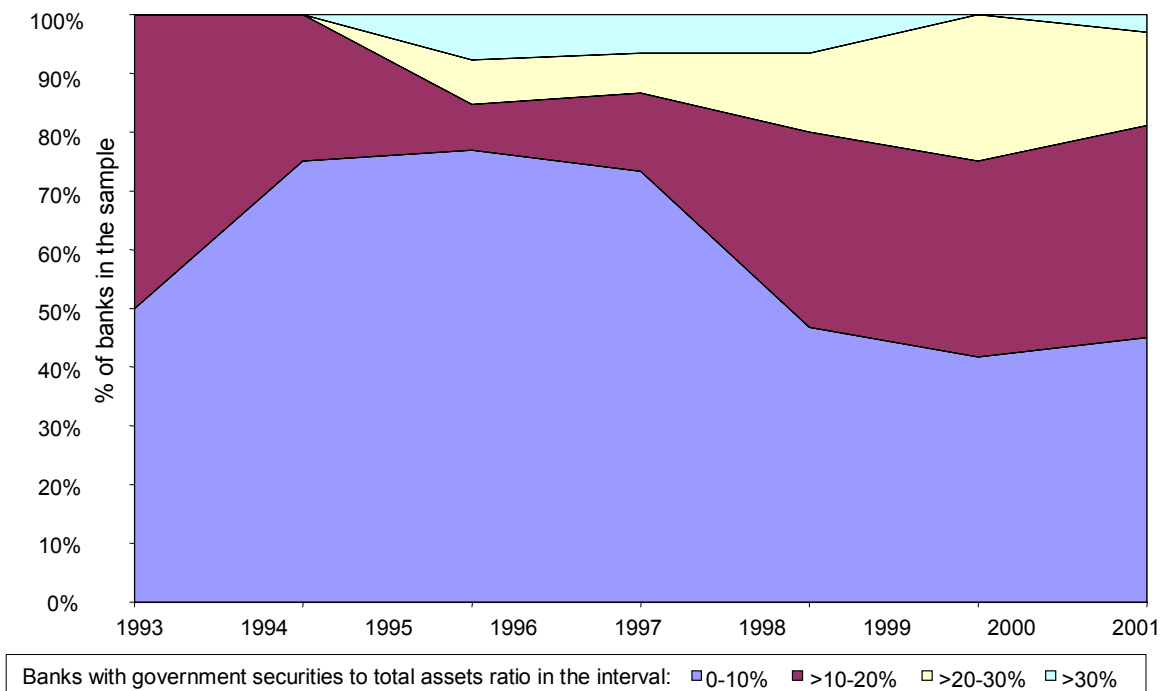
**Figure A.17: Distribution of variable government securities to total assets for Lithuanian banks, 1993-2001**



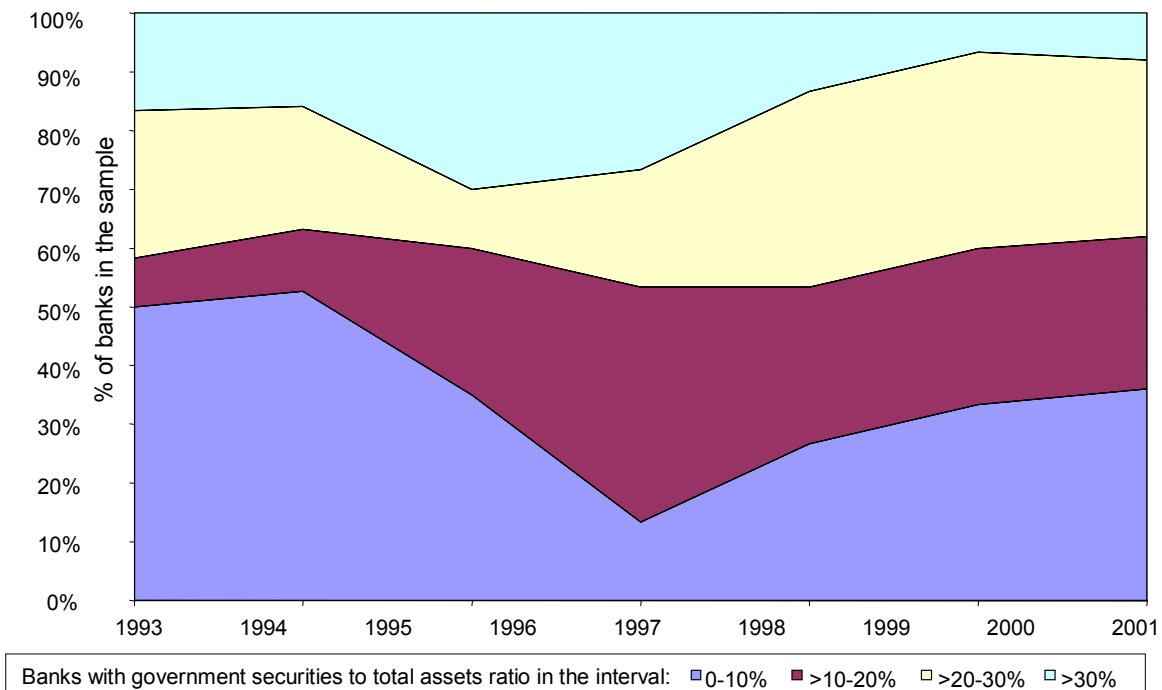
**Figure A. 18: Distribution of variable government securities to total assets for Polish banks, 1993-2001**



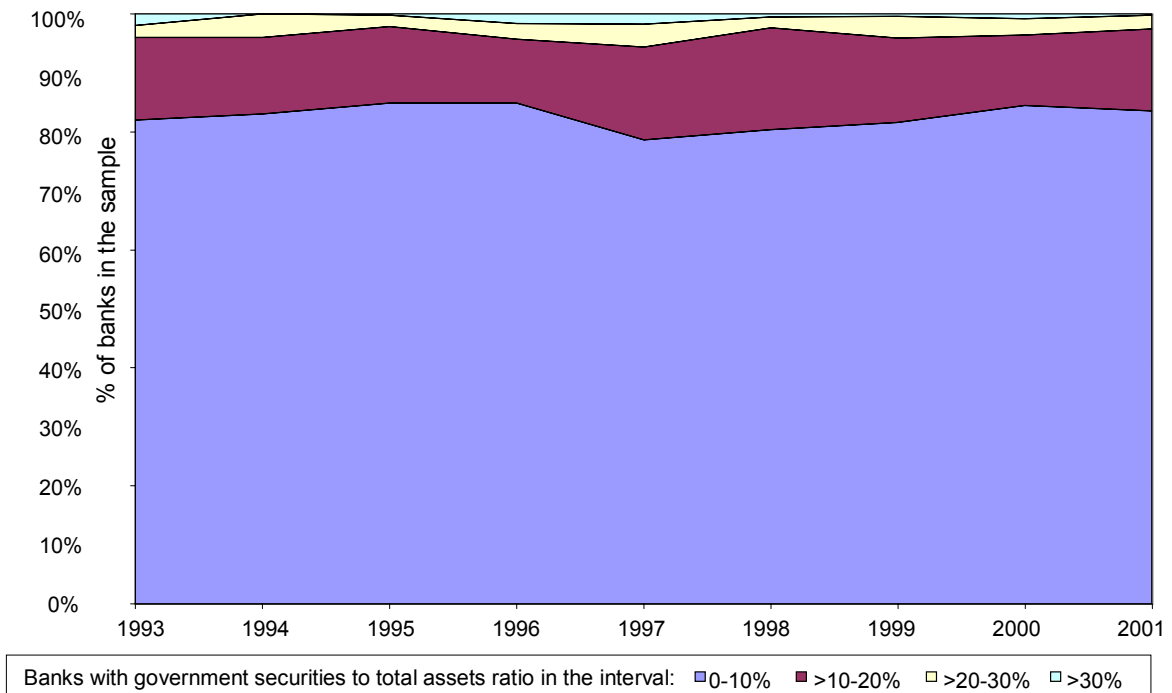
**Figure A.19: Distribution of variable government securities to total assets for Slovakian banks, 1993-2001**



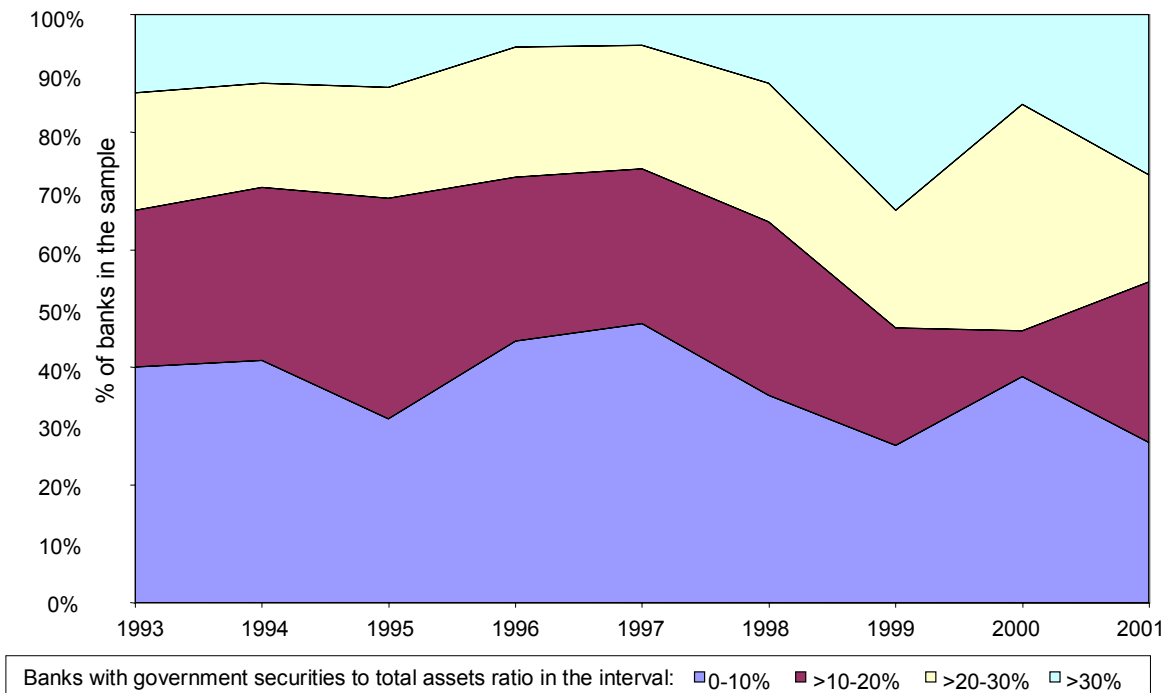
**Figure A.20: Distribution of variable government securities to total assets for Slovenian banks, 1993-2001**



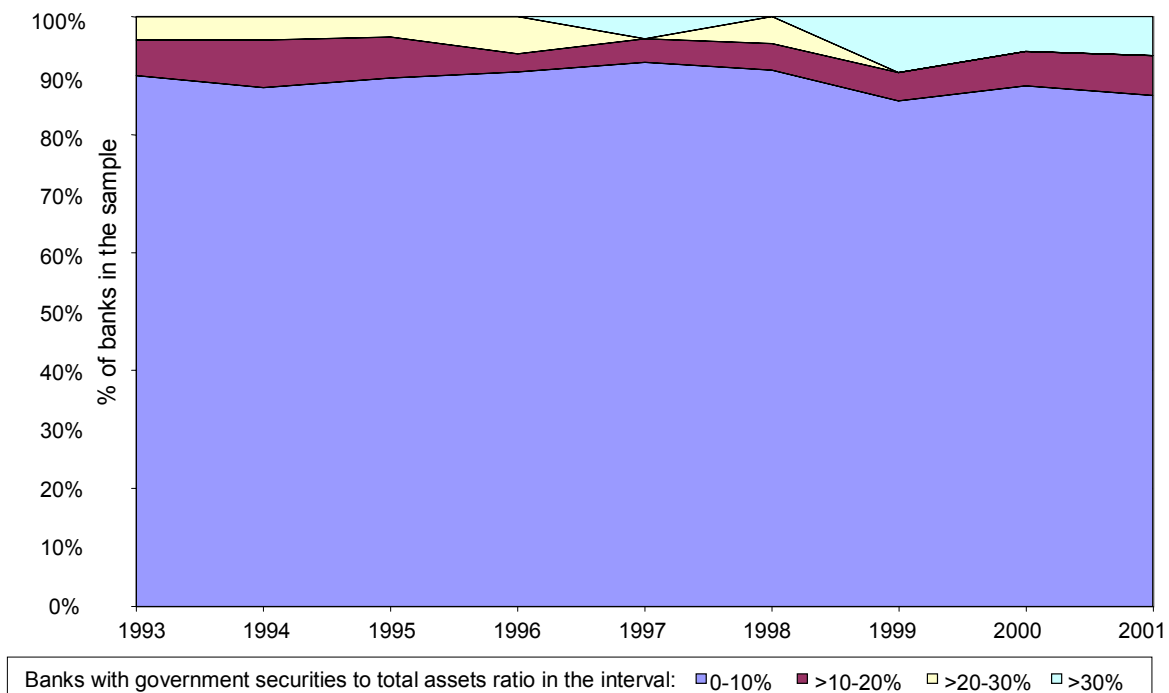
**Figure A.21: Distribution of variable government securities to total assets for German banks, 1993-2001**



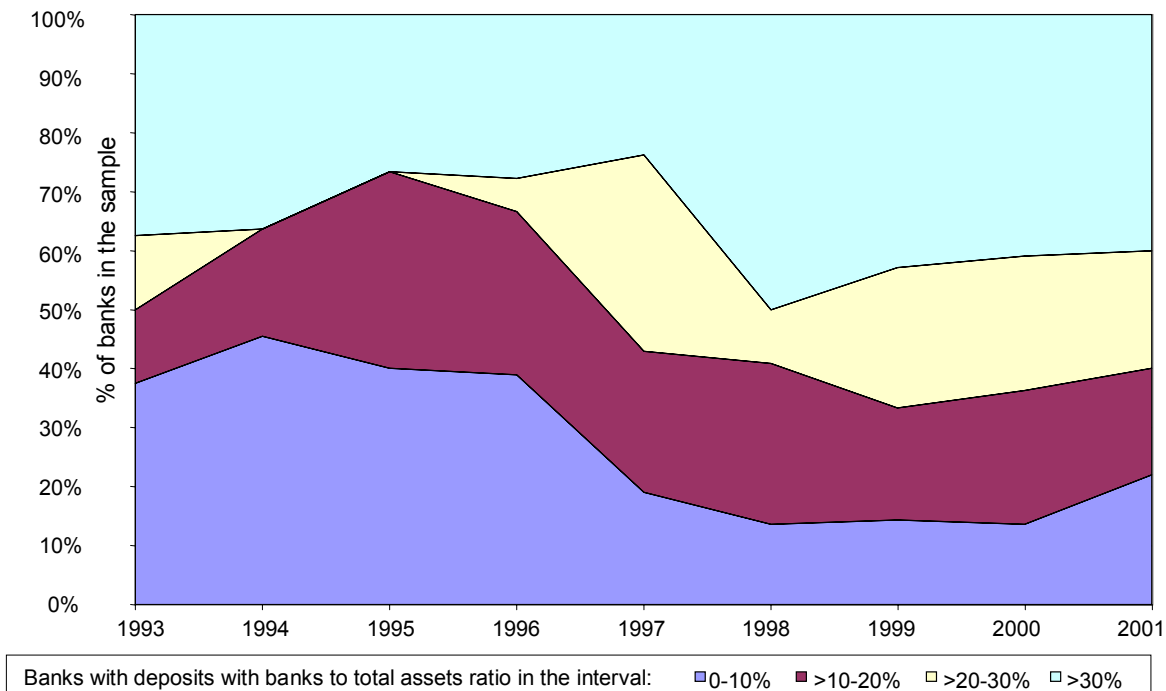
**Figure A.22: Distribution of variable government securities to total assets for Greek banks, 1993-2001**



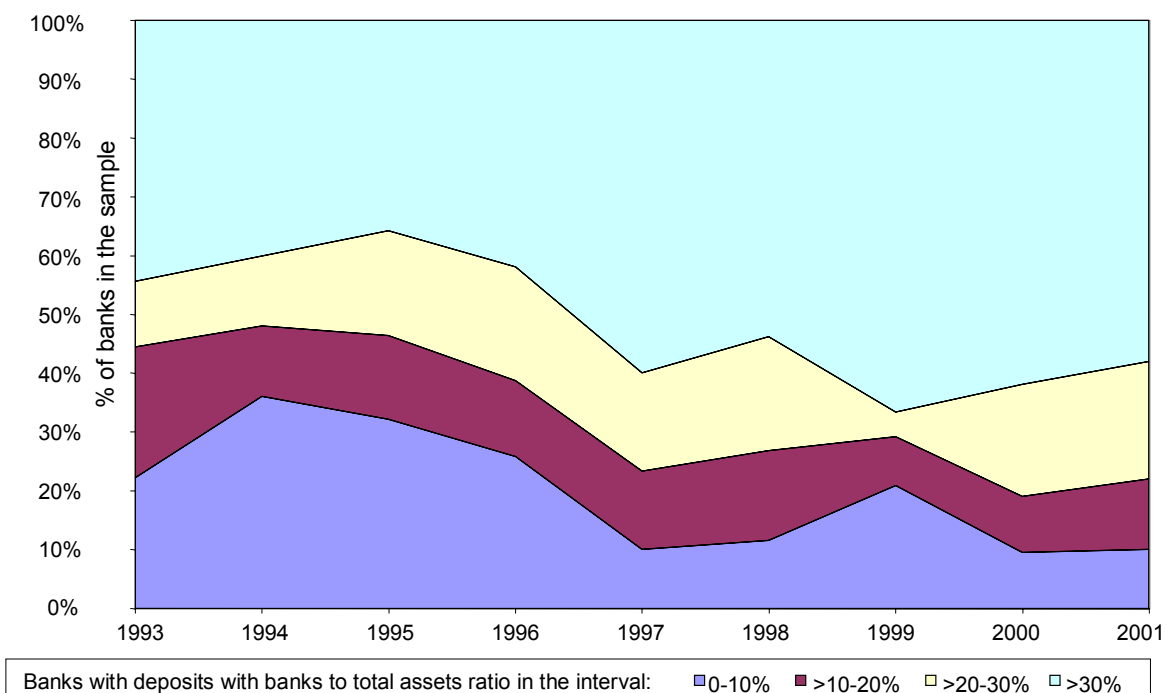
**Figure A.23: Distribution of variable government securities to total assets for Dutch banks, 1993-2001**



**Figure A.24: Distribution of variable deposits with banks to total assets for Bulgarian banks, 1993-2001**

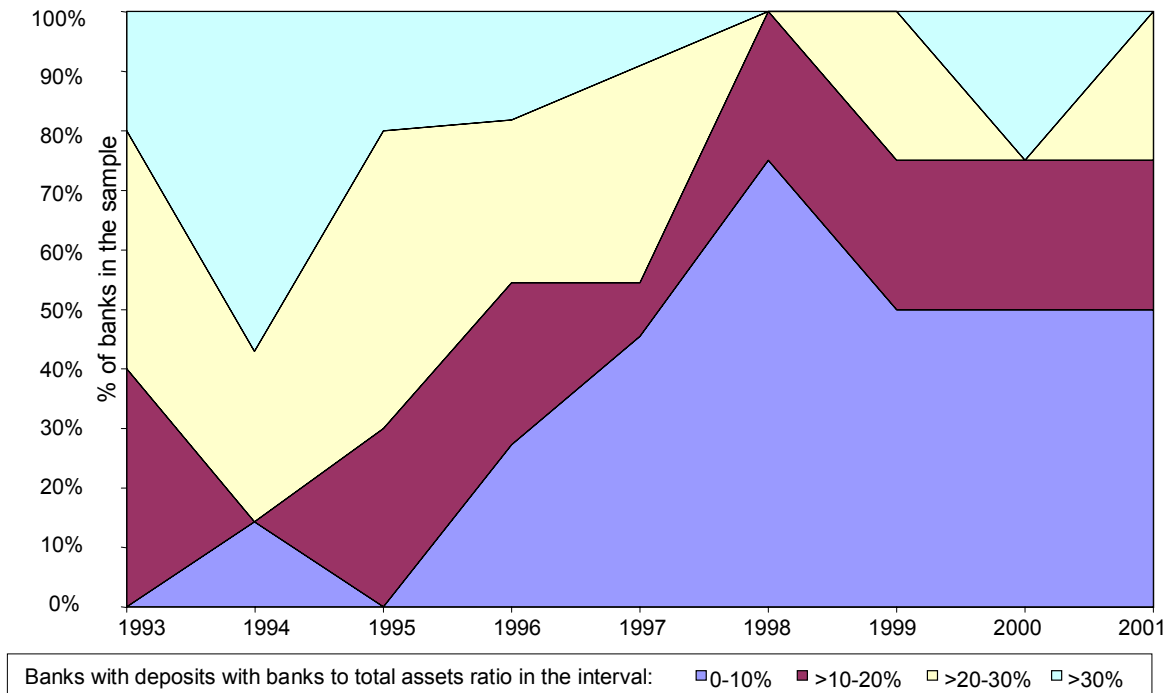


**Figure A.25: Distribution of variable deposits with banks to total assets for Czech banks, 1993-2001**

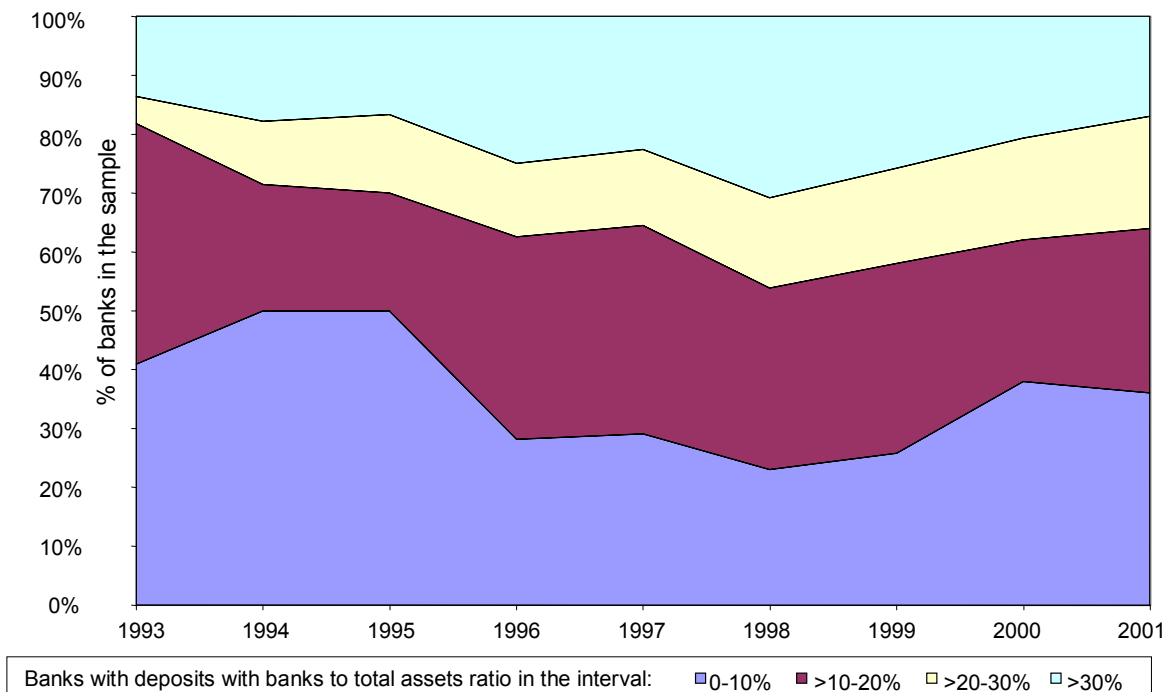




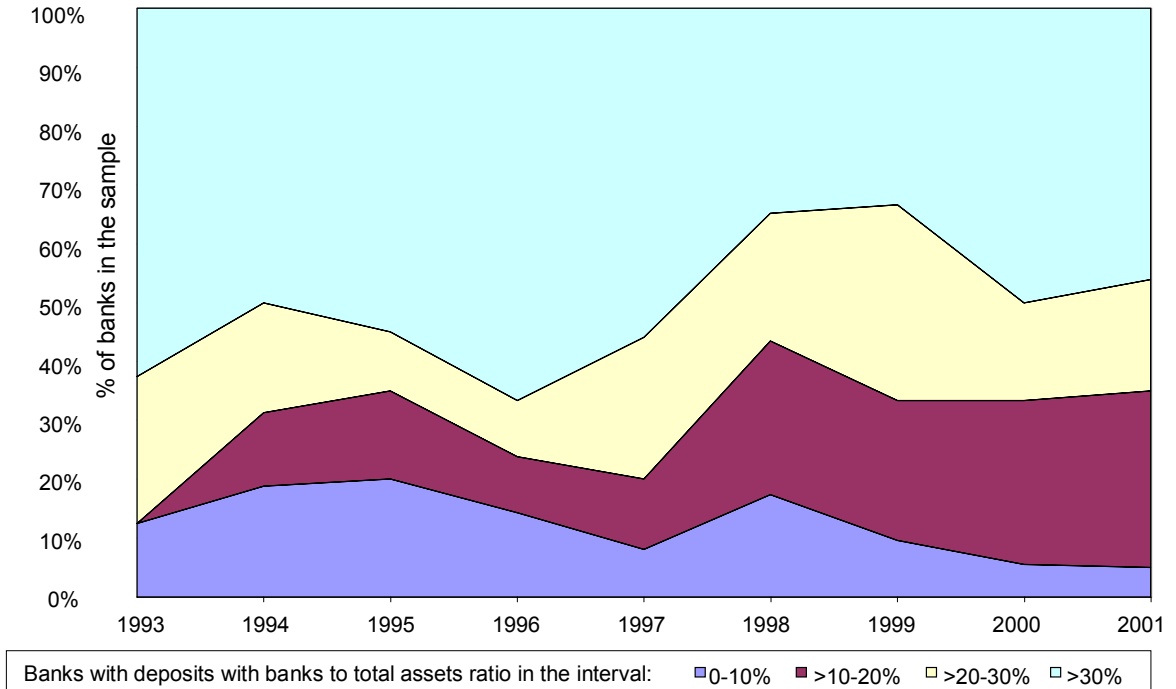
**Figure A.26: Distribution of variable deposits with banks to total assets for Estonian banks, 1993-2001**



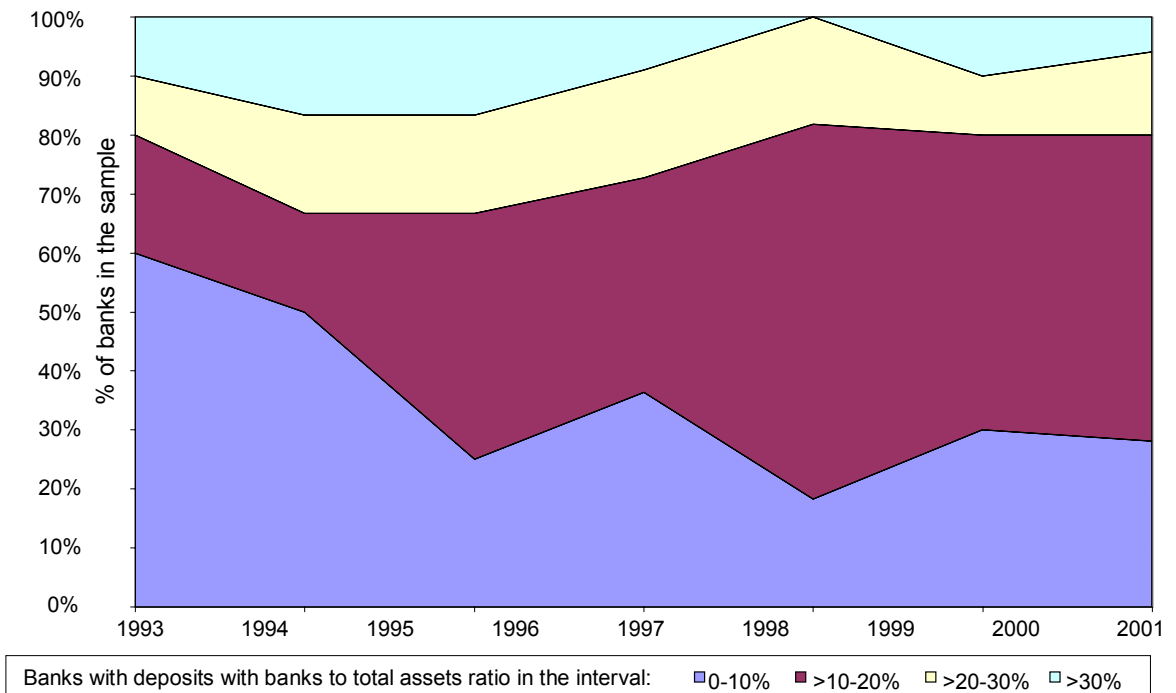
**Figure A.27: Distribution of variable deposits with banks to total assets for Hungarian banks, 1993-2001**



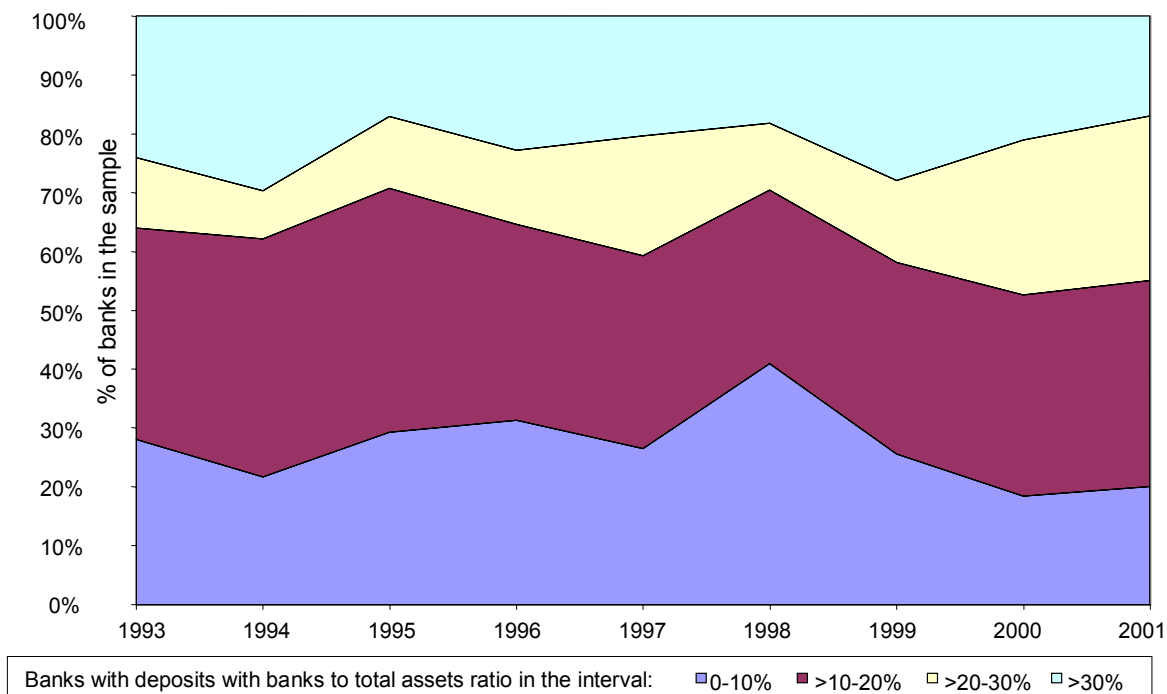
**Figure A.28: Distribution of variable deposits with banks to total assets for Latvian banks, 1993-2001**



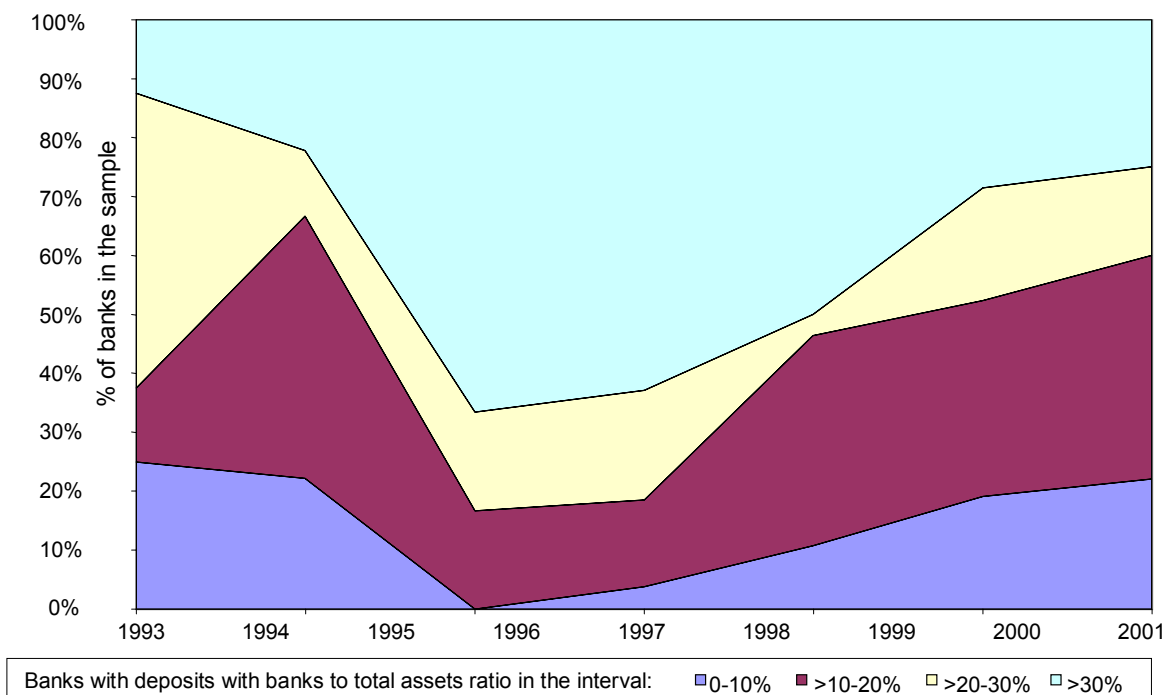
**Figure A.29: Distribution of variable deposits with banks to total assets for Lithuanian banks, 1993-2001**



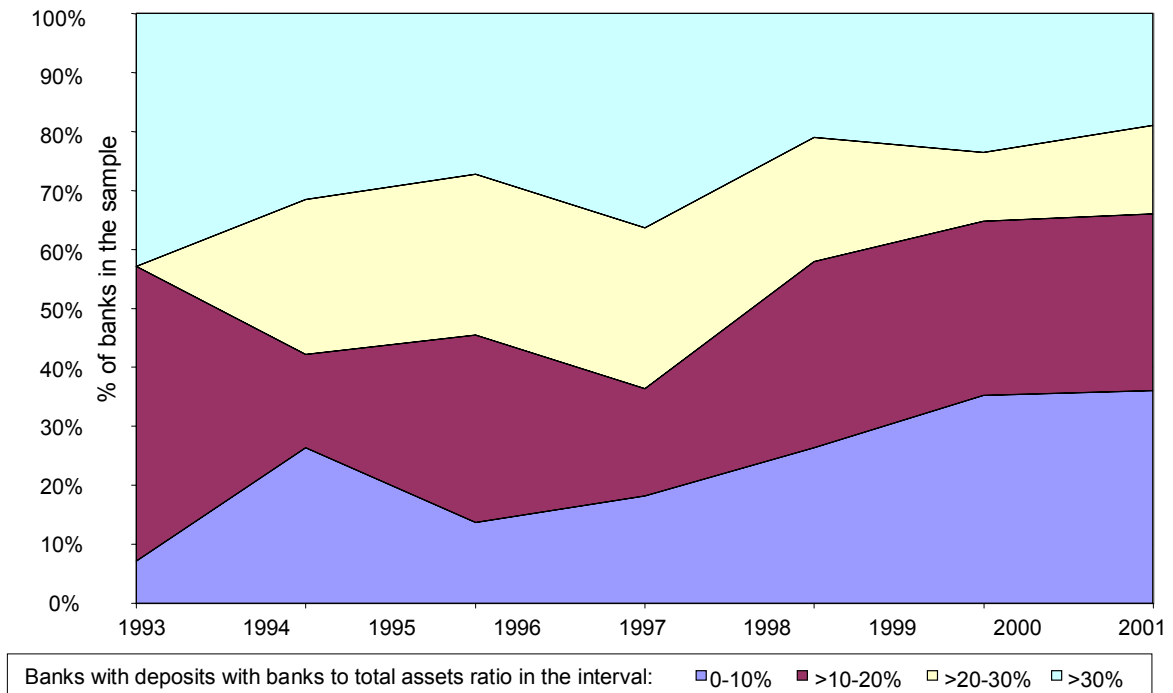
**Figure A.30: Distribution of variable deposits with banks to total assets for Polish banks, 1993-2001**



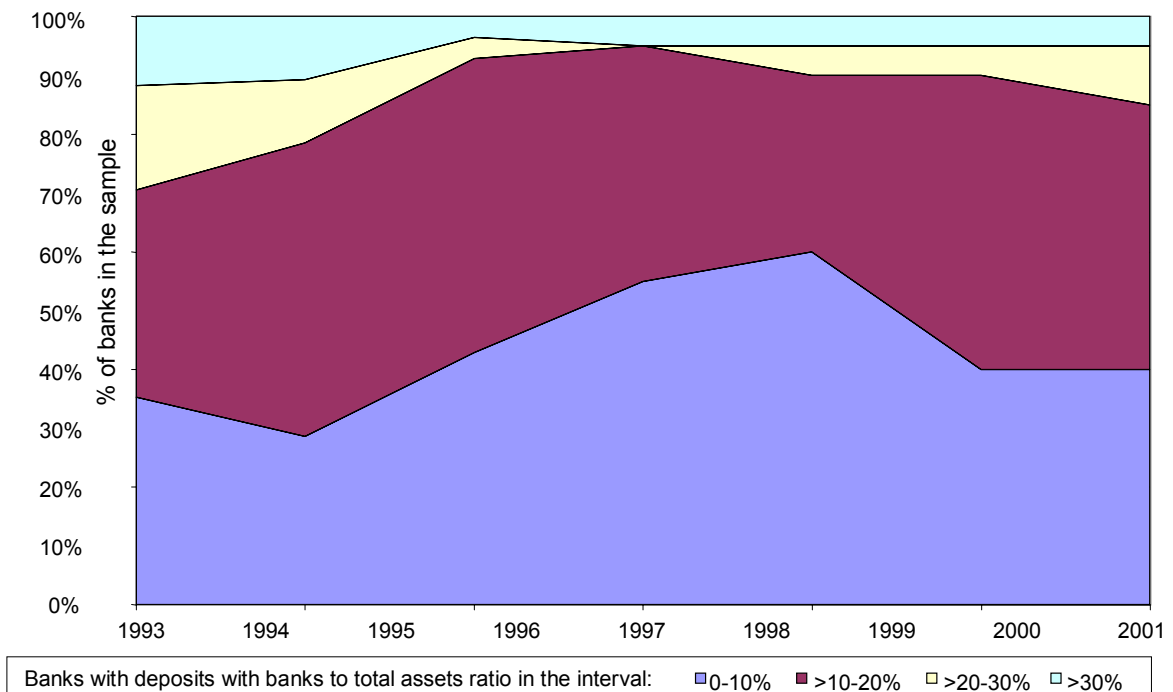
**Figure A.31: Distribution of variable deposits with banks to total assets for Romanian banks, 1993-2001**



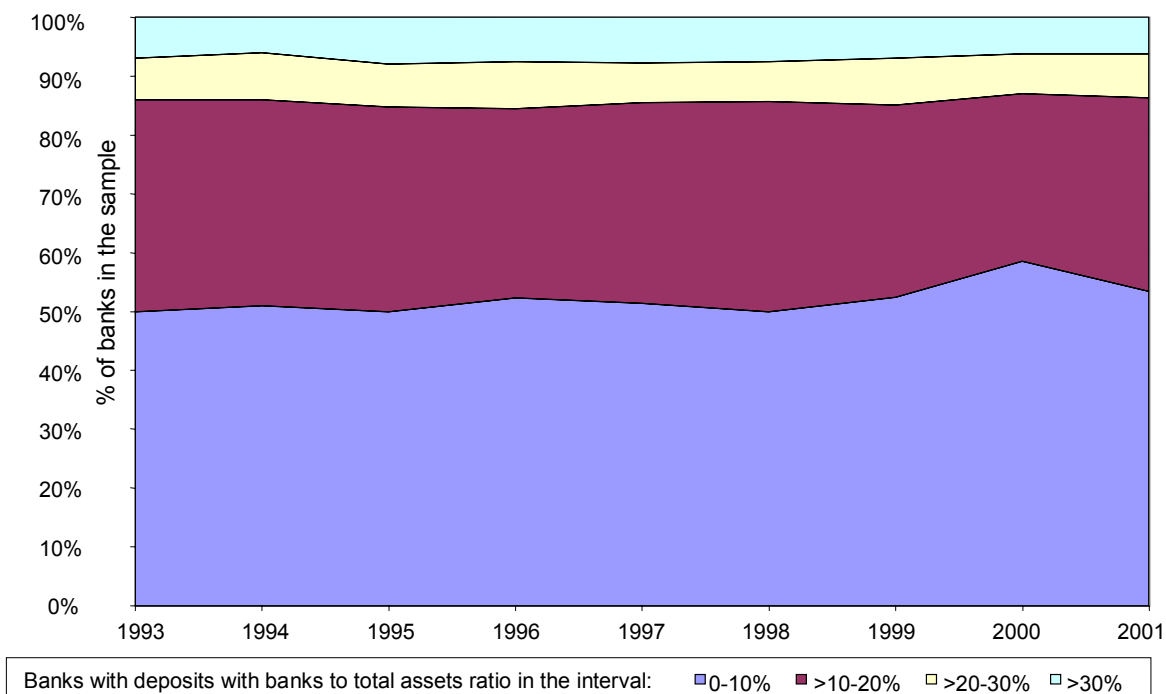
**Figure A.32: Distribution of variable deposits with banks to total assets for Slovakian banks, 1993-2001**



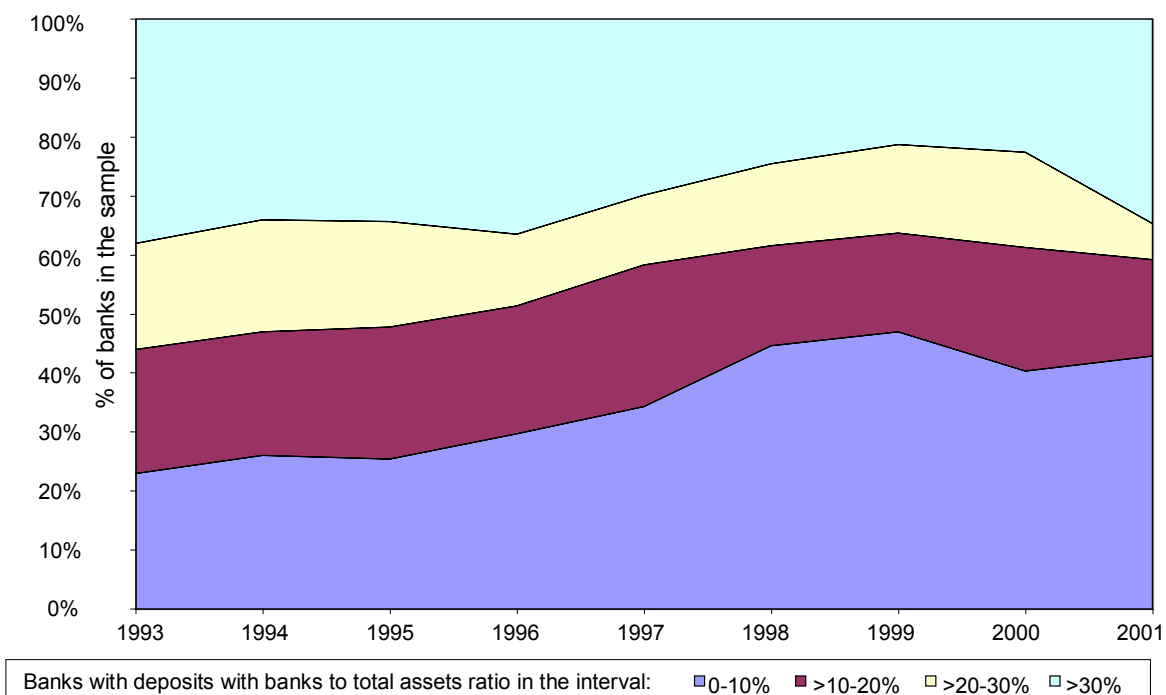
**Figure A.33: Distribution of variable deposits with banks to total assets for Slovenian banks, 1993-2001**



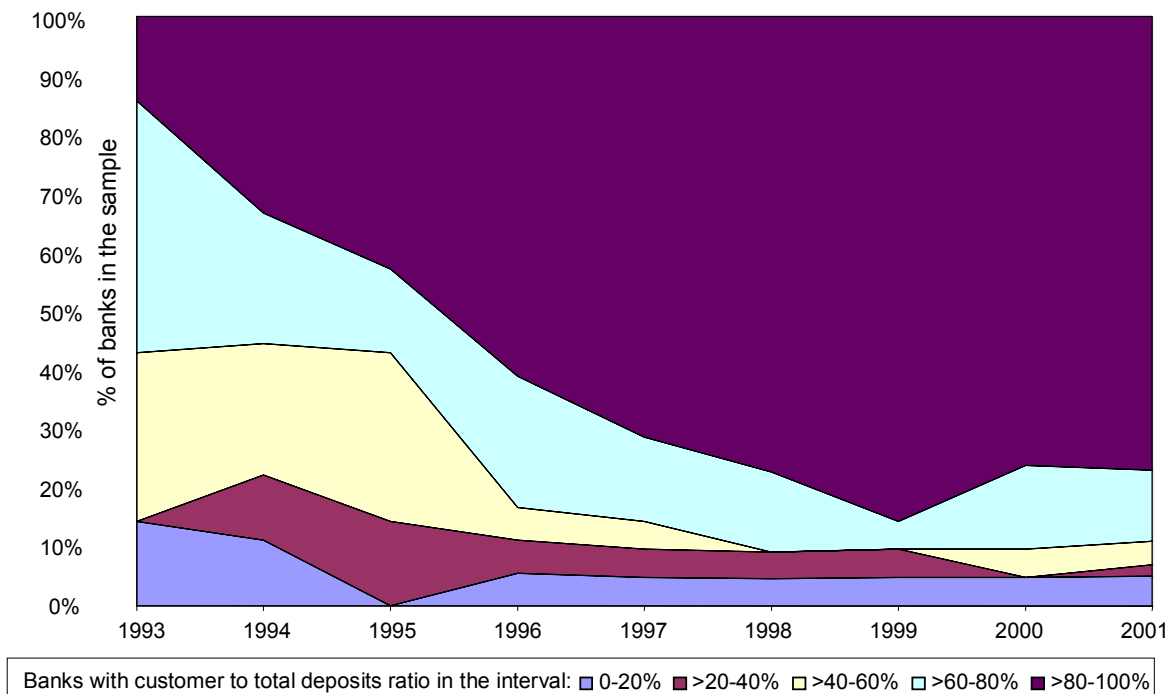
**Figure A.34: Distribution of variable deposits with banks to total assets for German banks, 1993-2001**



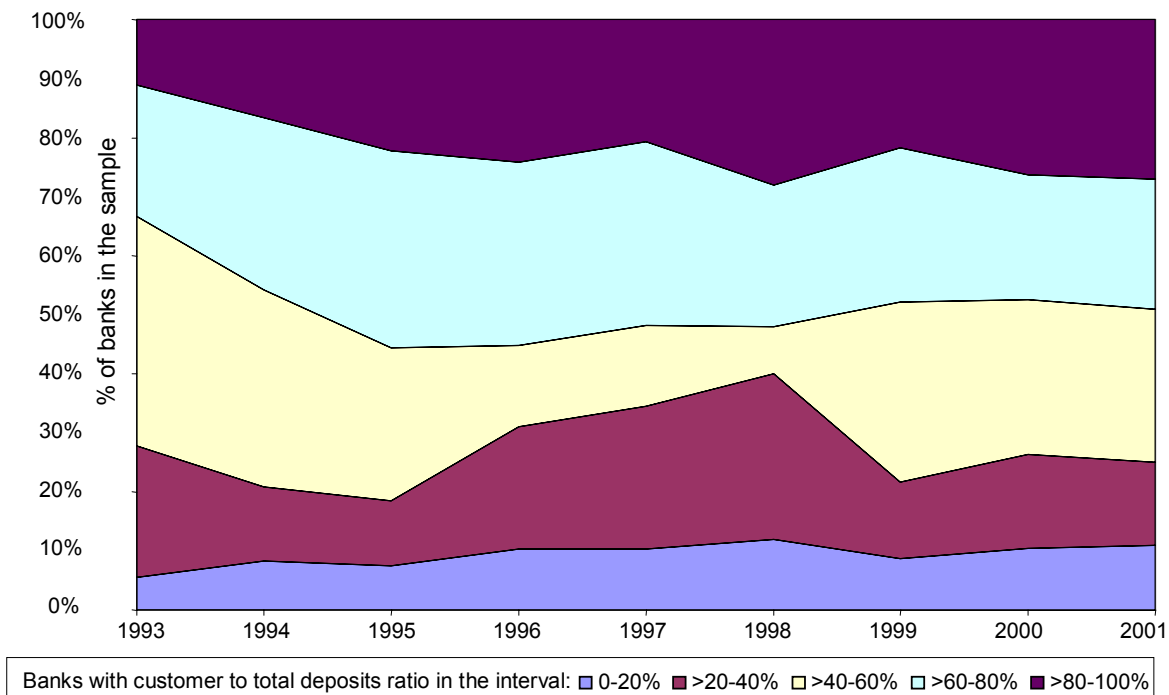
**Figure A.35: Distribution of variable deposits with banks to total assets for Dutch banks, 1993-2001**



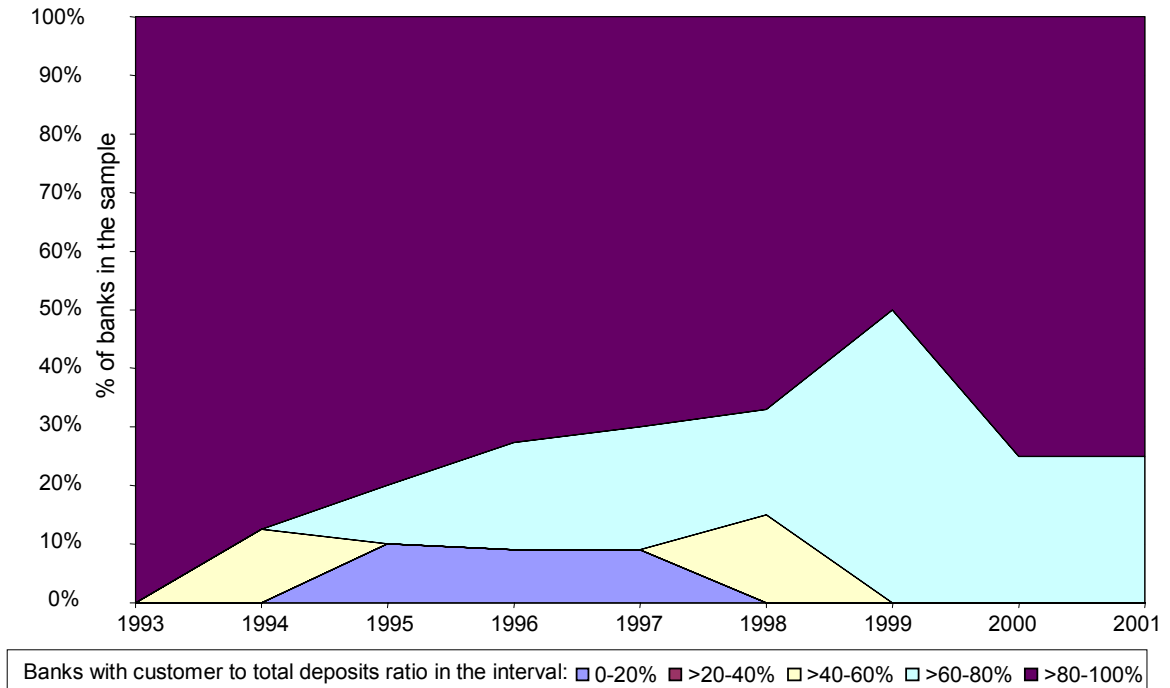
**Figure A.36: Distribution of variable customer deposits to total deposits for Bulgarian banks, 1993-2001**



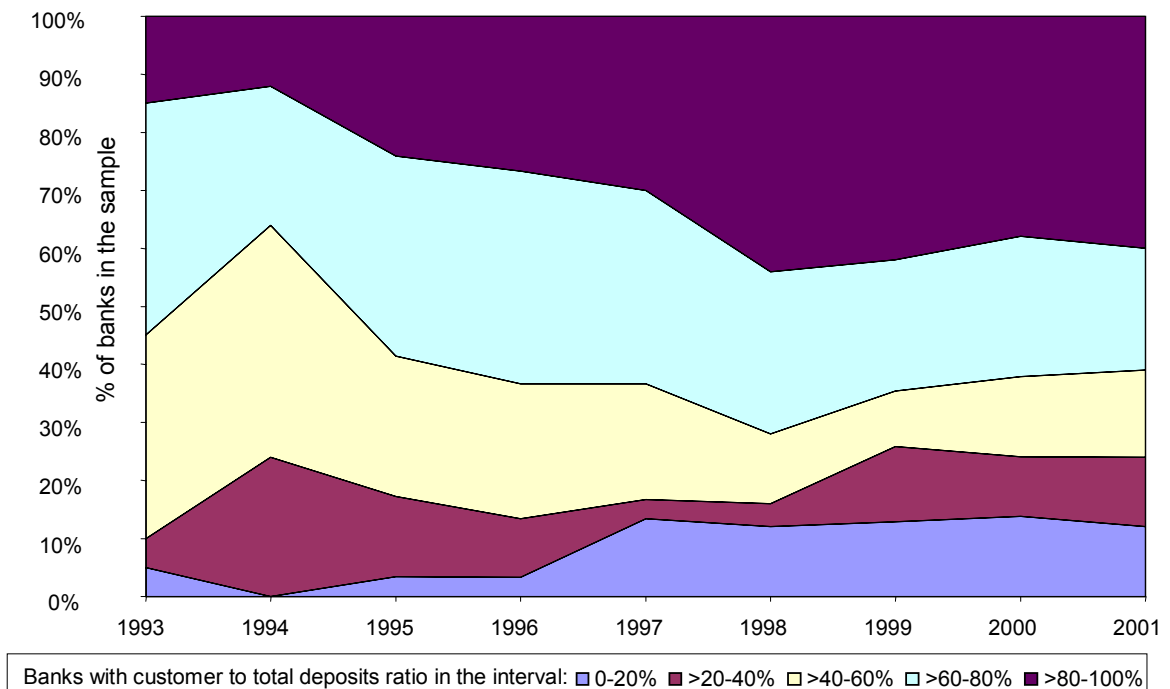
**Figure A.37: Distribution of variable customer deposits to total deposits for Czech banks, 1993-2001**



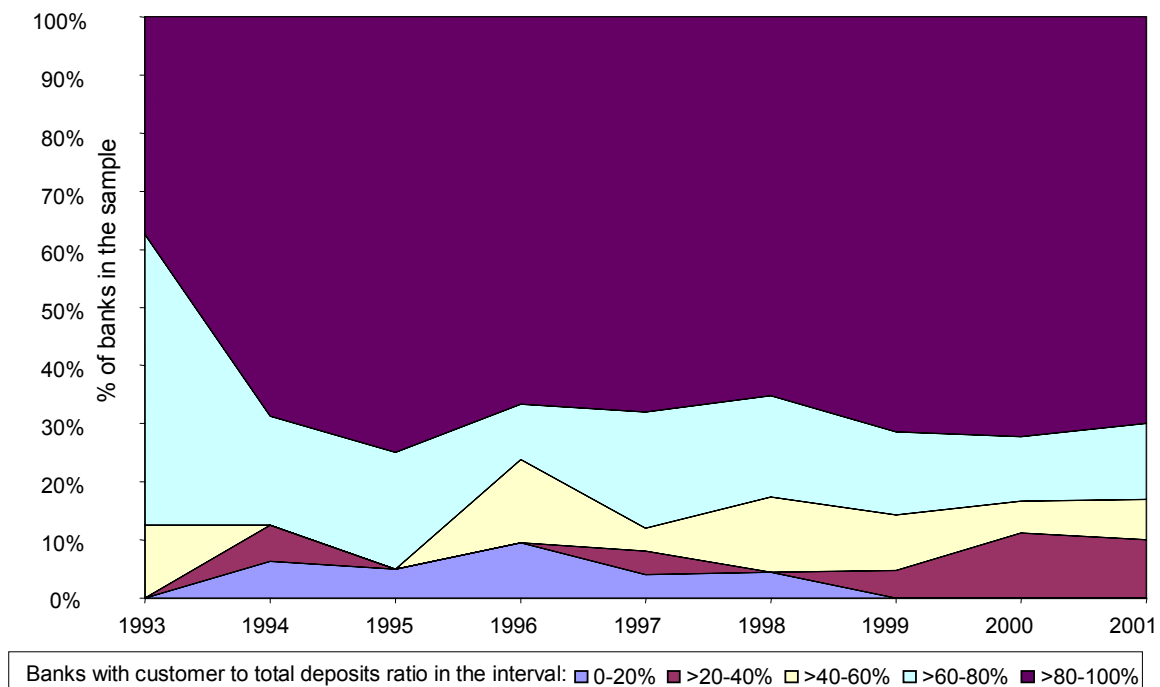
**Figure A.38: Distribution of variable customer deposits to total deposits for Estonian banks, 1993-2001**



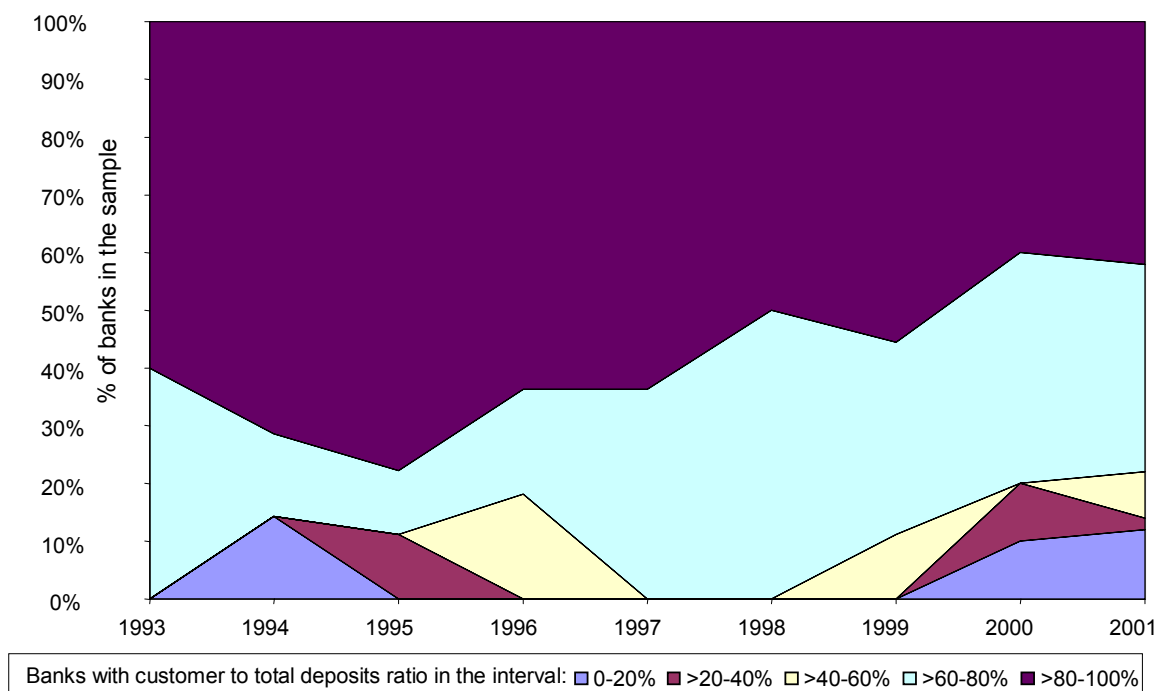
**Figure A.39: Distribution of variable customer deposits to total deposits for Hungarian banks, 1993-2001**



**Figure A.40: Distribution of variable customer deposits to total deposits for Latvian banks, 1993-2001**

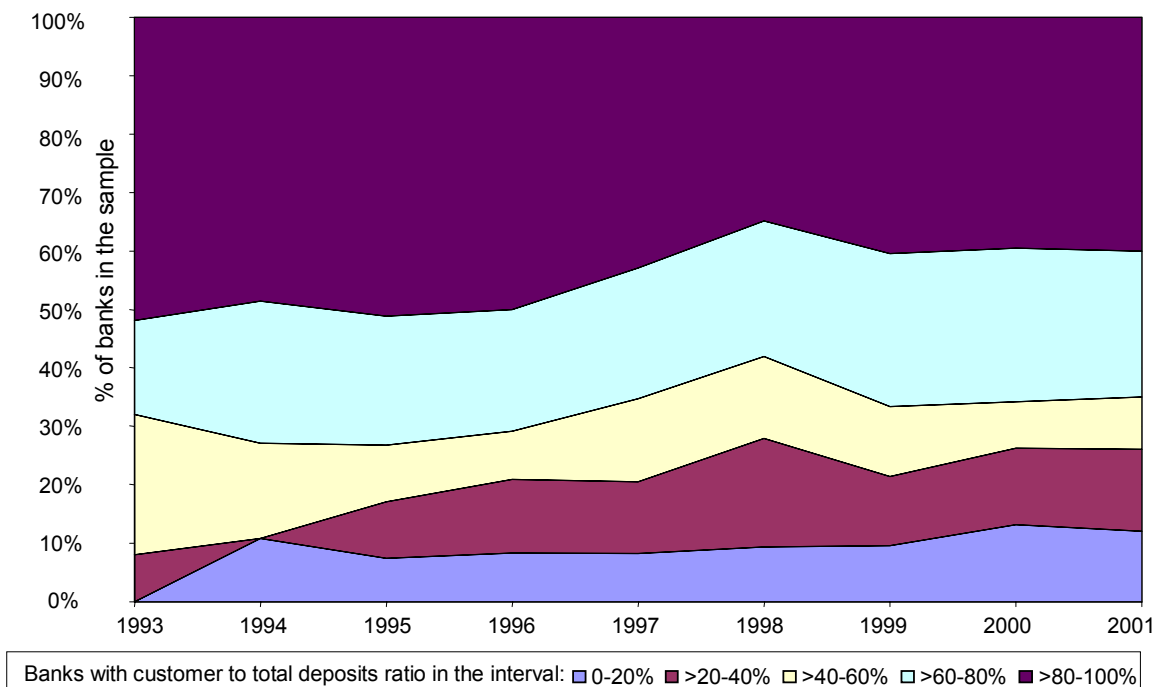


**Figure A.41: Distribution of variable customer deposits to total deposits for Lithuanian banks, 1993-2001**

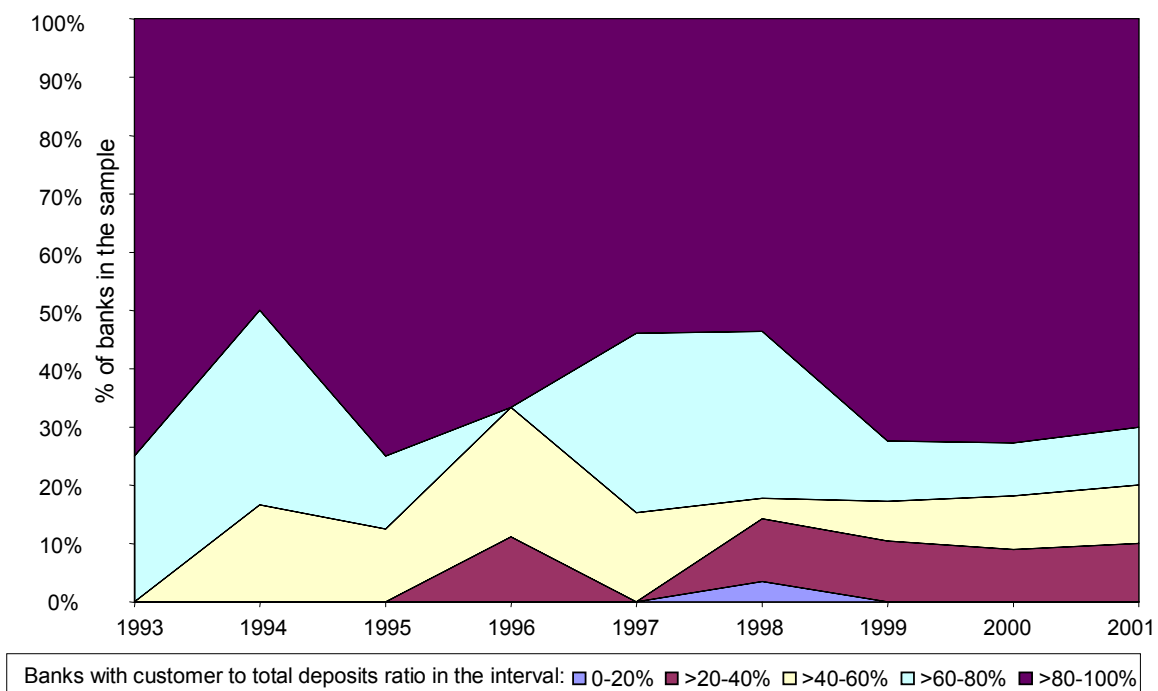




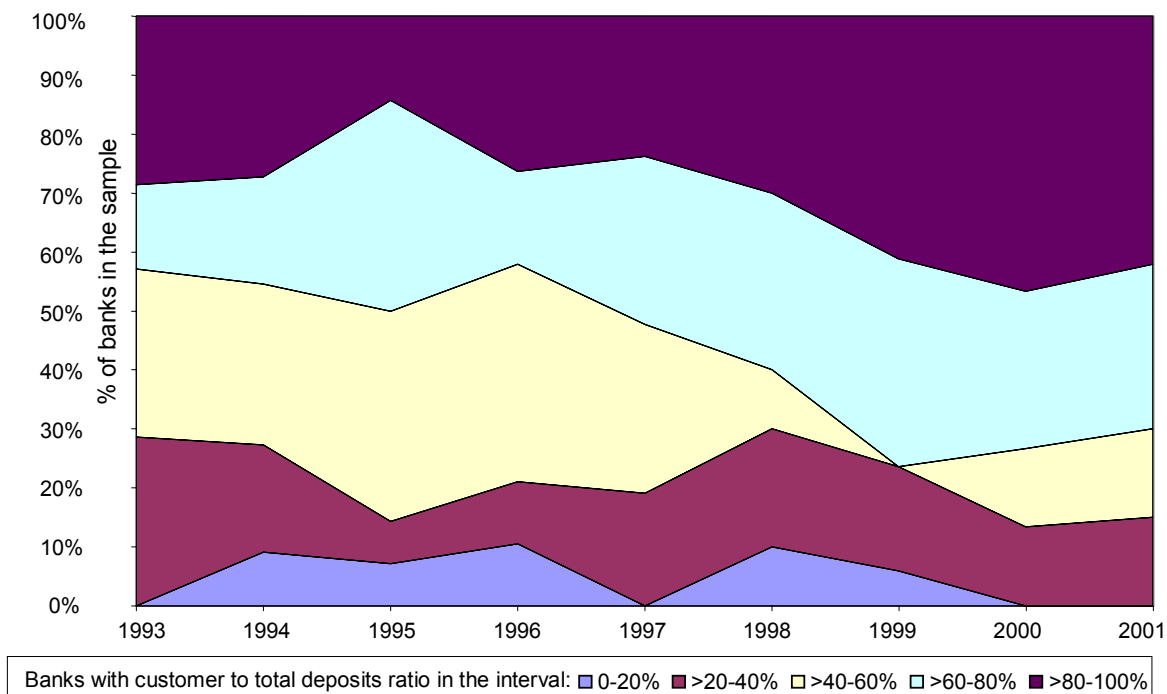
**Figure A.42: Distribution of variable customer deposits to total deposits for Polish banks, 1993-2001**



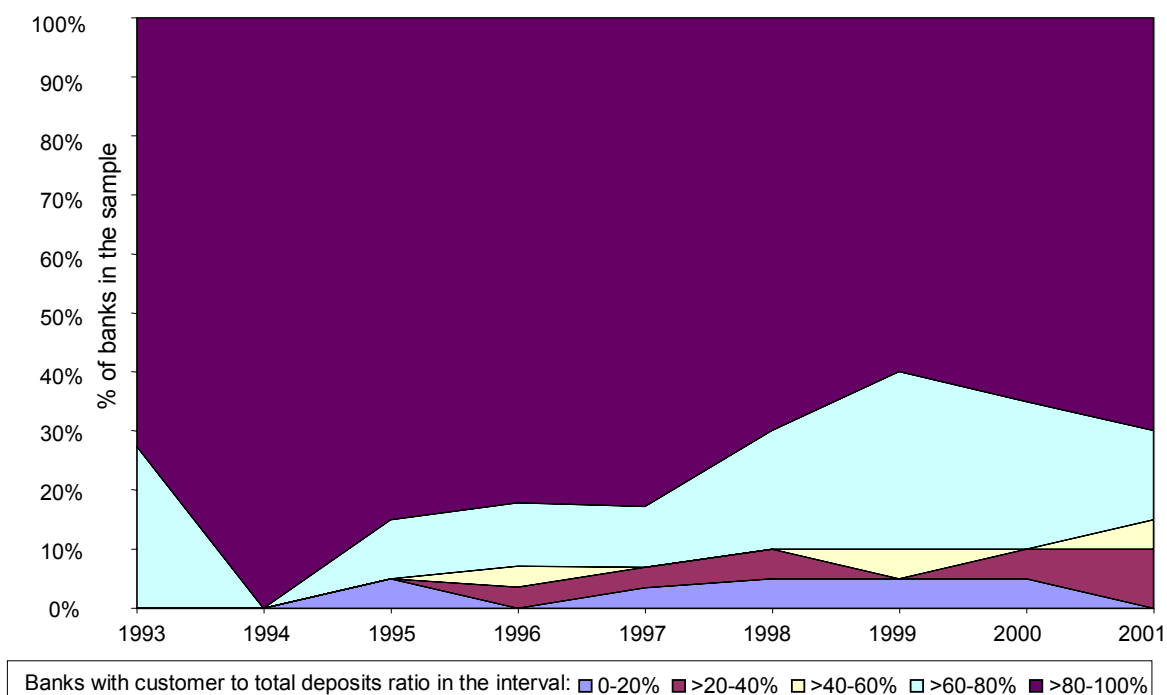
**Figure A.43: Distribution of variable customer deposits to total deposits for Romanian banks, 1993-2001**



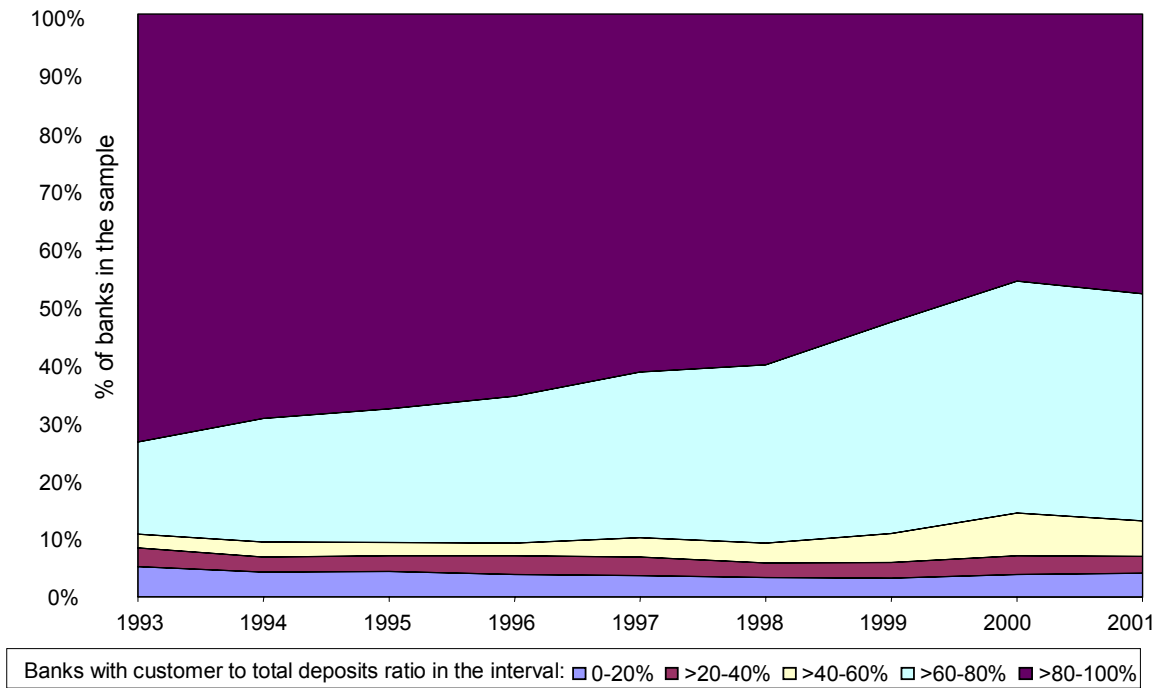
**Figure A.44: Distribution of variable customer deposits to total deposits for Slovakian banks, 1993-2001**



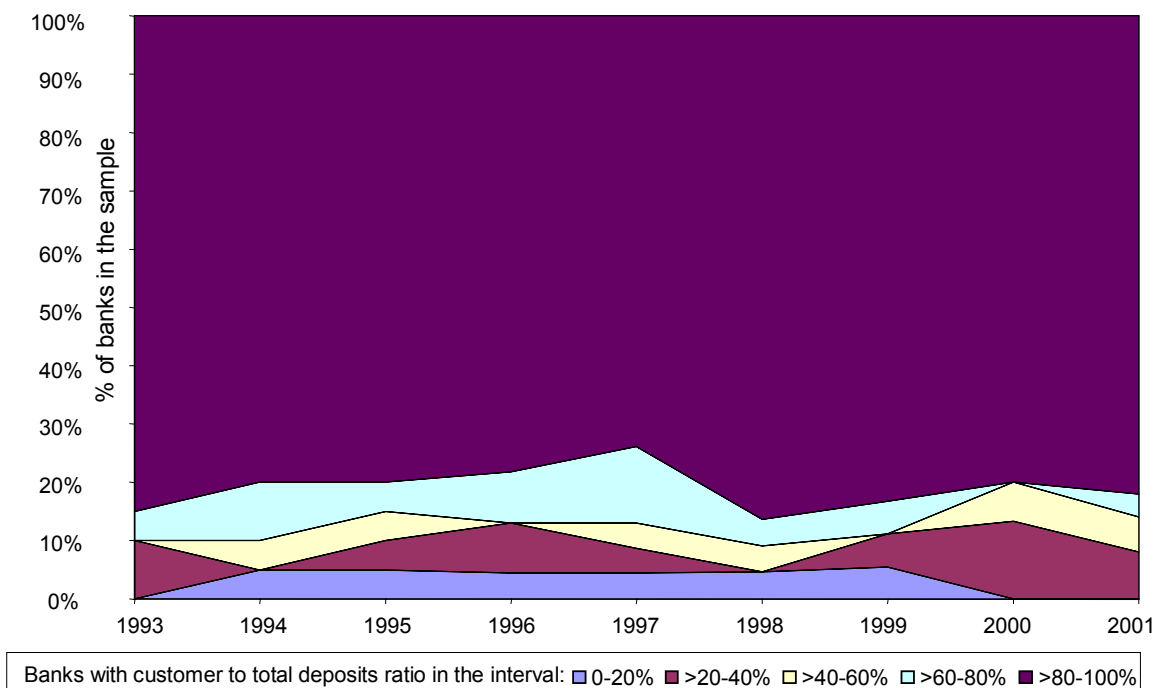
**Figure A.45: Distribution of variable customer deposits to total deposits for Slovenian banks, 1993-2001**



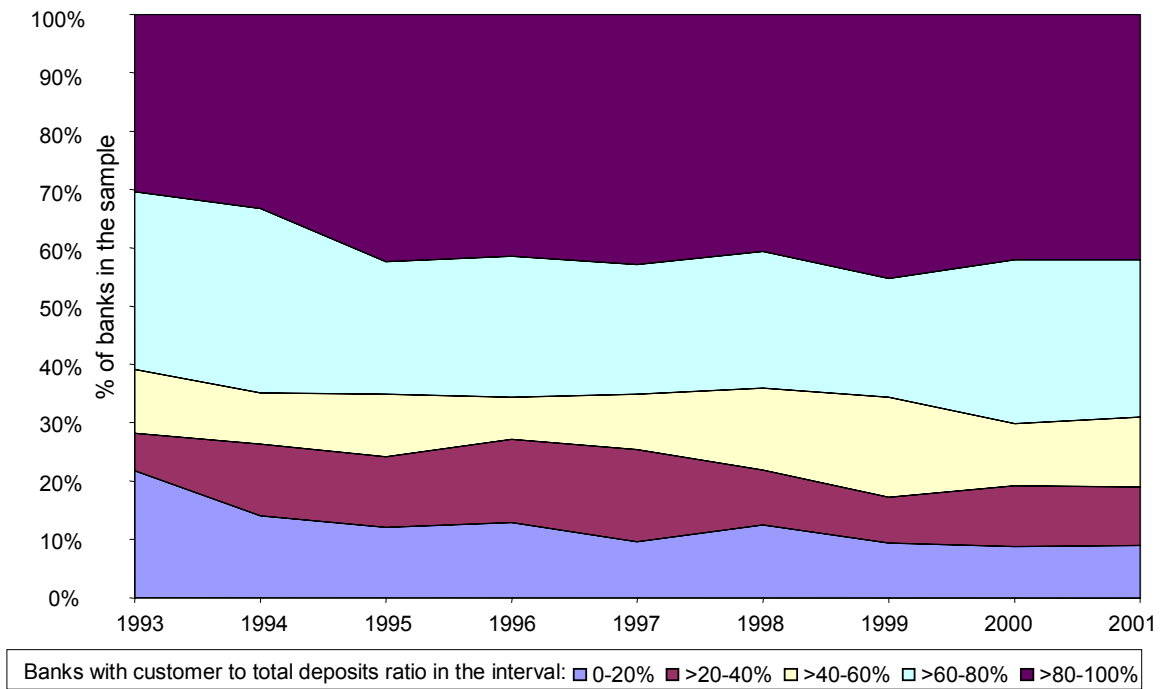
**Figure A.46: Distribution of variable customer deposits to total deposits for German banks, 1993-2001**



**Figure A.47: Distribution of variable customer deposits to total deposits for Greek banks, 1993-2001**



**Figure A.48: Distribution of variable customer deposits to total deposits for Dutch banks, 1993-2001**



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