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Financial Liberalization and Business Cycles: The Experience of Countries in the Baltics and Central Eastern Europe

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Discussion Paper
Series 1: Studies of the Economic Research Centre
No 23/2004

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ISBN 3–86558–010–6

Abstract:

This paper extends the work of Kaminsky and Schmukler (2003) to the Baltic and Central Eastern European future Member States of the European Union, to test if the same short-run increase in cyclical volatility arising from financial integration is observed in this specific sample of "emerging markets". This work finds some signs that, contrary to other emerging markets, this does not happen: for the future Member States, financial integration, similarly to the outcome observed in mature market economies, reduces cyclical volatility both in the short and in the long run. Weak indications are found that this may happen partially due to the anchoring of expectations provided by the EU Accession, and to the more robust institutional framework imposed by this process onto the countries in question.

Keywords: Enlargement, European Union, financial liberalization, booms, busts, cycles, Bry-Boschan, volatility.

JEL-Classification: F02, F30, F32, F33, F34, F36, G15, P20

Non Technical Summary

The main aim of this paper is to extend the liberalization index developed by Kaminsky and Schmukler, 2003 (K&S), for a specific sample of countries, namely, the previously centrally planned economies from Central and Eastern Europe that became members of the EU in 2004 (resp. will become in 2007), and to perform a similar analysis on them.

My results lend only weak support to the basic assumption of this study: a re-estimation of K&S's core regressions, using cycles defined by a Bry-Boschan algorithm, finds some signs that financial liberalization does generate benefits both in the short and in the long run, measured via the statistically significant extension of the amplitude of upward cycles and the –statistically non-significant- reduction of downward cycles of stock market indexes. Importantly, these estimated results diverge from K&S, as in their work "emerging markets" experience a relative *short run* increase in the amplitude of downward cycles. Some of the weak results are likely related to the shortness and specific features of the sample of countries.

Another noteworthy feature is that only minor liberalization reversals, led by the financial sector component, were observed in the aggregate liberalization index. Also, those reversals do not seem to be driven by "contagion" from shocks in other emerging markets (like the Asian or Russian crisis), but reflect country-specific shocks, related to temporary reactions to the several banking crisis observed in the region.

Concerning the importance of the EU Accession, the initial assumption of this paper was that the positive results above would come about due to the anchoring of expectation provided by the perspective of entry into the EU in 2004 (or 2007, in the case of Bulgaria and Romania), and by the imposition of the more vigorous macro and institutional framework required by the Accession process itself. Robust signs of this are *not* found in the K&S regressions, perhaps because the liberalization index itself captures the effects of the EU Accession process.

Finally, using a different framework than K&S's to assess the affects of liberalization on financial, real and nominal *volatility*, the results are similar to the previous ones, but they seem to indicate that the *capital account liberalization* is the element that most

consistently and significantly reduces volatility. One also observes significant time-varying effects on the coefficients, as one should expect, given the nature of the series used, but no non-linear effects of liberalization. On this section, the majority the econometric results seem to support *some* specific role for the EU Enlargement process in reducing volatility.

Nicht technische Zusammenfassung

Das Hauptziel dieses Papiers ist es, den von Kaminsky und Schmukler (2003) (K&S) entwickelten Liberalisierungindex für ein spezifisches Sample von Länder, nämlich die früher zentral geplanten Wirtschaftssysteme von Zentral- und Osteuropa, die 2004 Mitglieder der EU geworden sind (oder 2007 werden sollen), zu erweitern und eine ähnliche Analyse für diese Länder durchzuführen.

Meine Resultate unterstützen die grundlegende Annahme dieser Studie nur schwach: eine Neuschätzung der Kernregression von K&S, deutet darauf hin, dass finanzielle Liberalisierung sowohl kurz- als auch langfristig vorteilhaft ist; dies wird durch die statistisch signifikante Verlängerung der Amplitude der Aufwärtszyklen und der - statistisch nicht-signifikanten - Verringerung der Abwärtszyklen von Börsenindizes gemessen. Dagegen ist bei K&S in "emerging markets" eine relativ kurzfristige Zunahme der Amplitude der Abwärtszyklen zu beobachten. Einige der Resultate hängen wahrscheinlich mit der Kürze und den spezifischen Eigenschaften des Samples von Ländern zusammen.

Eine andere bemerkenswerte Eigenschaft ist, dass nur kleine Umkehrungen von Liberalisierungsmaßnahmen im gesamten Liberalisierungindex beobachtet wurden. Auch scheinen jene Umkehrungen nicht durch "Ansteckung", d.h. ausgelöst von Schocks in anderen "emerging markets" (wie die asiatische oder russische Krise), zu entstehen, sondern sie reflektieren länderspezifische Schocks, meist temporäre Reaktionen auf die in der Region selbst beobachteten Bankenkrisen.

Hinsichtlich der Bedeutung des EU Beitritts war die Ausgangsannahme dieses Papiers, dass die obigen positiven Resultate sich aus der Festigung der Erwartungen aufgrund der Perspektive des Beitritts in die EU in 2004 (oder 2007, im Fall von Bulgarien und von Rumänien) erklären würden und aus der Auferlegung des strikteren makroökonomischen und institutionellen Rahmens durch den Beitrittprozess selbst. Robuste Anzeichen eines solchen Zusammenhangs werden in den Regressionen analog zu denen von K&S nicht gefunden, möglicherweise weil der Liberalisierungindex selbst die Effekte des EU Beitrittsprozesses erfasst.

Mit einem anderen Analyseverfahren als dem von K&S, das verwendet wird, um den Einfluss der Liberalisierung auf die finanzielle, reale und nominale Volatilität festzustellen, werden ähnliche Resultate erzielt, aber sie scheinen zu zeigen, dass die Liberalisierung der Kapitalverkehrsbilanz das Element ist, das durchweg signifikant die Volatilität verringert. Es werden auch signifikante, mit der Zeit variierende Effekte auf die Koeffizienten beobachtet, wie man sie aufgrund des Charakters der gegebenen Zeitreihe erwarten sollte, aber keine nicht-linearen Effekte der Liberalisierung. Auf Basis dieser Analyse deutet die Mehrheit der ökonometrischen Resultate darauf hin, dass der EU Erweiterungsprozess eine spezifische Rolle bei der Volatilität gespielt hat.

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1 Introduction

Financial and capital flows' liberalization can play a fundamental role in increasing growth and welfare. Typically, emerging or developing economies seek foreign savings to solve the inter-temporal savings-investment problem. On the other hand, current account surplus countries seek opportunities to invest their savings. To the extent that capital flows from surplus to deficit countries are well intermediated and, therefore, put to the most productive use, they increase welfare.[1]

Liberalization can, however, also be dangerous, as has been witnessed in many past and recent financial, currency and banking crises. It can make countries more vulnerable to exogenous shocks. In particular, if serious macroeconomic imbalances exist in a recipient country, and if the financial sector is weak, be it in terms of risk management, prudential regulation and supervision, large capital flows can easily lead to serious financial, banking or currency crises. A number of recent crises, like those in East Asia, Mexico, Russia, Brazil and Turkey (described, for example, in IMF (2001)), and, to some extent, the Argentinean episode of late 2001, early 2002, have

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[1] The opening up and liberalization of financial services in developing countries would yield, in principle, both static and dynamic gains: static, one-shot efficiency gains from optimally allocating the available resources (i.e., developed, capital abundant nations would export capital to the developing, capital scarce ones; also domestically, deeper, more effective financial systems would facilitate the linkages between domestic savers and investors, reducing information asymmetries and scale problems), and dynamic ones because the growth rate would be shifted upwards by the increased capital stock created by the greater investment (temporarily, later adjusting again to the long run growth trend).

demonstrated the potential risks associated with financial and capital flows liberalization.[2]

Central Eastern Europe has a somewhat different experience, when compared to other emerging regions, concerning the financial liberalization process, as the process there seems to have been much less crisis-prone than in, for instance, Asia or Latin America. This maybe, at least partially, because the current high degree of external and financial liberalization in the Central Eastern European countries (CEECs),[3] beyond questions of economic allocative efficiency, must be understood in terms of the process of Accession to the European Union.[4]

The EU integration process implies legally binding, sweeping liberalization measures –not only capital account liberalization, but investment by EU firms in the domestic financial services, and the maintenance of a competitive domestic environment, giving this financial liberalization process strong external incentives (and constraints). Those measures were implemented parallel to the development of a highly sophisticated regulatory and supervisory structure, again based on EU standards. This whole process happened also with the EU's technical and financial support, through specific programs –like the PHARE one, for these so-called Accession, and now Acceding Countries (ACs), and the TACIS, for the former Soviet Union ones- and direct assistance from EU institutions, like the European Commission, the European Parliament and the European Central Bank (also, on a very early stage of the transition process, the influence of the IMF in setting up policies and institutions in several

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[2] A good example of a recent work that supports this cautious line on financial liberalization *for emerging markets*, published by no other organization than the IMF itself, and actually co-authored by its' them Chief Economist, Kenneth Rogoff, see Prasad et al., 2003.

[3] For capital mobility indicators for the Eastern European countries, in an index from 0 to 100, where 100 indicates full liberalization (see IMF, World Economic Outlook 2000), Estonia and Latvia score 97.6, Lithuania 85.7, the Czech Republic, 73.7, Hungary 59.5, while a "larger" economy like Poland scores 55.3, Slovenia, 40.5, Bulgaria 35.3, Slovakia, 23.7 and Romania, the less liberalized in the group, a mere 12.5: the average, non-GDP weighted, is 58.14. Nevertheless, it must be noted that the index above was computed in 1997 and that now it is certainly higher, especially among the relative laggards like Bulgaria, Slovenia and Slovakia (but with the possible exception of Romania), given that, among other things, capital account liberalization is also a (pre)-requisite for EU membership.

[4] In March 31, 1998, the European Commission launched official Accession processes with Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia (see Vinhas de Souza at all, 1999). All those Eastern European countries –bar Bulgaria and Romania, for which the expected date is 2007, plus Cyprus and Malta, shall become members of the European Union in early May 2004.

countries in the region –an intervention widely considered to haven been successful- was very important: see Hallerberg et al., 2002).

Additionally, EU membership in the near future seems to act as an anchor to market expectations (see Vinhas de Souza and Hölscher, 2001), limiting the possibilities of self-fulfilling financial crises and regional contagion (see Linne, 1999), which had the observed devastating effects in both Asia and Latin America (even a major event, like the Russian collapse of 1998, had very reduced regional side effects). Several regional episodes of financial systems' instability did happen (see Vinhas de Souza, 2002(a) and Vinhas de Souza, 2002(b)), but none with the prolonged negative consequences observed in other regions (which was also due to the effective national policy actions undertaken after those episodes).

This study's main aim is to expand the Kaminsky and Schmukler database (see Kaminsky and Schmukler, 2003), from now on indicated as K&S, to include the Accession and Acceding Countries from Eastern Europe (namely, for Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia). In their original work, K&S build an extensive database of external and financial liberalization, which includes both developed countries and countries from emerging regions (but not from Eastern Europe).[5] With that, they create different indexes of liberalization (capital account, banking and stock markets: see Table I below) and using them individually and in an aggregate fashion, test for the effects and causality of this process on financial and real volatility, for the existence of differences between regions, and for the effects of the ordering of the liberalization process. With the extended database built in this paper, a similar set of regressions –to enable comparability- has been run for the CEECs, and the results are contrasted with those for the other regions included in the K&S original study.

One underlying hypotheses of this work is that the existing regulatory and institutional framework in Eastern Europe, plus a more sustainable set of macro policies, played an important role in enabling liberalization to largely deliver the

[5] Namely, their index covers the period 01:1973-06:1999, for the following 28 countries: Argentina, Brazil, Chile, Colombia, Hong Kong, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Taiwan, Thailand, and Venezuela (emerging markets) and Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Norway, Portugal, Spain, Sweden, United Kingdom and United States (mature economies).

welfare enhancing outcomes that it is supposed to. Such an "anchoring" role of the European Union in the CEECs, through the process of EU membership, and through the effective imposition of international standards of financial supervision and regulation, may indicate that, beyond multilateral organizations like the IMF or the OECD, a greater, pro-active regional stabilizing role in emerging markets by regional actors, for instance, the United States, or by some regional sub-grouping, like Mercosur, may also be welfare enhancing for other "emerging" regions.

This work is structured as follows: firstly, the individual components of the index will be described for my sample of countries. Afterwards, the constructed index and its components will be presented, for the sample as whole and for its individual country members, and compared with K&S's original index. In the next section, K&S-compatible core regressions are run. Afterwards, alternative specifications are estimated. Finally, the work ends with a conclusion.

Table 1. K&S Liberalization Index

Capital Account Liberalization	Financial Sector Liberalization	Stock Market Liberalization
Criteria for Full Liberalization *-Borrowing abroad by banks and corporations* Banks and corporations are allowed to borrow abroad mostly freely. They may need to inform the authorities, but the authorization is granted almost automatically. Reserve requirements might be in place but are lower than 10%. The required minimum maturity is not longer than two years. **And** *-Multiple exchange rates and other restrictions* There are no special exchange rates for either current account or capital account transactions. There are no restrictions to capital outflows. **Criteria for Partial Liberalization** *-Borrowing abroad by banks and Corporations* Banks and corporations are allowed to borrow abroad, subject to certain restrictions. Reserve requirements might be between 10 and 50%. The required minimum maturity might be between two and five years. There might be caps in borrowing and certain restrictions to specific sectors. **Or** *-Multiple exchange rates and other restrictions* There are special exchange rates for current account and capital account transactions. There might be some restrictions to capital outflows. **Criteria for No Liberalization** *-Borrowing abroad by banks and Corporations* Banks and corporations are mostly not allowed to borrow abroad. Reserve requirements might be higher than 50%. The required minimum maturity might be longer than five years. There might be caps in borrowing and heavy restrictions to certain sectors. ***Or*** *-Multiple exchange rates and other restrictions* There are special exchange rates for current account and capital account transactions. There might be restrictions to capital outflows.	**Criteria for Full Liberalization** *-Lending and borrowing interest rates* There are no controls (ceilings and floors) on interest rates. **And** *-Other indicators* There are likely no credit controls (subsidies to certain sectors or certain credit allocations). Deposits in foreign currencies are likely permitted. **Criteria for Partial Liberalization** *-Lending and borrowing interest rates* There are controls in either lending or borrowing rates (ceilings or floors). **And** *-Other indicators.* There might be controls in the allocation of credit controls (subsidies to certain sectors or certain credit allocations). Deposits in foreign currencies might not be permitted. **Criteria for No Liberalization** *-Lending and borrowing interest rates* There are controls in lending rates and borrowing rates (ceilings and floors). **And** *-Other indicators.* There are likely controls in the allocation of credit controls (subsidies to certain sectors or certain credit allocations). Deposits in foreign currencies are likely not permitted.	**Criteria for Full Liberalization** *-Acquisition by foreign investors* Foreign investors are allowed to hold domestic equity without restrictions. **And** *-Repatriation of capital, dividends, and interest* Capital, dividends, and interest can be repatriated freely within two years of the initial investment. **Criteria for Partial Liberalization** *-Acquisition by foreign investors* Foreign investors are allowed to hold up to 49 % of each company's outstanding equity. There might be restrictions to participate in certain sectors. There might be indirect ways to invest in the stock market, like through country funds. **Or** *-Repatriation of capital, dividends, and interest* Capital, dividends, and interest can be repatriated, but typically not before two and not after five years of the initial investment. **Criteria for No Liberalization** *-Acquisition by foreign investors* Foreign investors are not allowed to hold domestic equity. **Or** *-Repatriation of capital, dividends, and interest* Capital, dividends, and interest can be repatriated, but not before five years of the initial investment.

2 Capital Account

The achieving of capital account liberalization happened rather swiftly in most of the countries in my sample: by the mid 1990s, all bar Bulgaria and Romania had been declared Article VIII compliant (for those two countries, this happened in 1998: see Table II below).

One of the main driving forces behind this was the process of European Integration, for which external liberalization is a pre-requisite: in the early to mid-1990s, all the countries had signed Association Agreements with the European Union (frequently preceded by trade liberalization agreements with the EU, also called "Europe" trade agreements, usually with years given to the countries to prepare for their full implementation) and formally applied for EU membership.

Another additional factor supporting liberalization was IMF and OECD membership: four of the larger countries in my sample became OECD members during the second half of the 1990s. Another factor to be considered, as will become clear with the regressions analysis, is the *endogenous* decision process to liberalize in a sustainable fashion.

Table 2. Capital Account Liberalization

Countries	EU Association Agreements: Date of entry into force	Article VIII Compatibility	OECD Member-ship
Bulgaria	-Europe Agreement: 2/95 (signed 3/93). A "Europe" Trade Agreement also signed in 3/93. -Application for EU membership: 12/95	-IMF entry: 25/9/90. Article VIII: 24/9/98.	
Czech Rep.	-Czechoslovakia break-up: 1/1/93. -(New) Europe Agreement: 2/95 (old one signed in 12/91, new in 10/93). A "Europe" Trade Agreement since 3/92 (signed in 12/91). -Application for EU membership: 1/96.	-IMF entry: 20/9/90 (as the Czech and Slovak Federal Republic, and, since 1/93, as separate states). Article VIII: 1/10/95.	-12/95: OECD membership.
Estonia	-Independence: 20/8/91 -Europe Agreement: 2/98 (signed: 6/95). -Free Trade Agreement with the EU signed in 7/94. -Application for EU membership: 11/95.	-IMF entry: 25/5/92. Article VIII: 15/8/94.	
Hungary	-Europe Agreement: 2/94 (signed: 12/91). A "Europe" Trade Agreement since 3/92 (also signed in 12/91). -Application for EU membership: 3/94.	-IMF entry: 05/06/1982. Article VIII: 1/1/96.	-5/96: OECD Membership.
Latvia	-Independence: 21/8/91. -Europe Agreement: 2/98 (signed: 6/95). -Free Trade Agreement with the EU signed in 7/94. -Application for EU membership: 10/95.	-IMF entry: 19/5/92. Article VIII: 10/6/94.	
Lithuania	-Independence: declared in 11/3/90, only accepted by URSS in 6/9/91. -Europe Agreement: 2/98 (signed: 6/95). -Free Trade Agreement with the EU signed in 7/94. -Application for EU membership: 12/95	-IMF entry: 29/4/92. Article VIII: 3/5/94.	
Poland	-Europe Agreement: 2/94 (signed: 12/91). A "Europe" Trade Agreement since 3/92 (also signed in 12/91). -Application for EU membership: 4/94.	-IMF entry: 06/12/86. Article VIII: 1/6/95.	-11/96: OECD Membership.
Romania	-Europe Agreement: 2/95 (signed in 2/93). A "Europe" Trade Agreement (also signed in 2/93). -Application for EU membership: 6/95	-IMF entry: 15/12/72. Article VIII: 25/3/1998.	
Slovakia	-Czechoslovakia break-up: 1/1/93. -(New) Europe Agreement: 2/95 (signed: 10/93). A Trade Agreement since 3/92 (signed: 12/91). -Application for EU membership: 6/95	-IMF entry: 20/9/90 (as the Czech and Slovak Federal Republic, and, since 1/93, as separate states). Article VIII: 1/10/95.	-8/00: OECD Membership.
Slovenia	-Independence: 25/6/91. -Europe Agreement: 2/99 (signed 6/96). -Application for EU membership: 6/96	-IMF entry: 14/12/92. Article VIII: 1/9/95.	

3 Banking Sector

Financial integration, in the form of the opening up the banking sector to foreign banks, is seen as being positive, on a micro level, as foreign banks are usually better capitalized and more efficient than their domestic counterparts (of course, the domestic banking sector eventually catches-up: for an indication of this process at the ACs, see, among others, Tomova et al., 2003). Also from a macroeconomic perspective, financial integration maybe positive for the Eastern European countries, both for long run growth and, as there are indications that foreign banks do not contract either their credit supply nor their deposit base, in helping to smooth the cycle (see de Haas and Lelyveld, 2003: they find some indication that this is linked to the better capitalization base and prudential ratios, as better capitalized domestic banks behave similarly to foreign banks). Given the bank-centered nature of virtually all the financial systems of the future Member States, this is particularly important for them.

In most of the future member states, the initial stage of the creation of the two-tier banking system,[6] modelled on the Western European "universal bank" system,[7] was characterized by rather liberal licensing practices[8] and limited supervision policies (aimed at the fast creation of a *de novo* commercial, private banking sector: see Fleming et al., 1996, Balyozov, 1999, Enoch et al., 2002, Sörg et al., 2003). This caused a mushrooming of new banks in those countries in the early 1990s.

Parallel to this, a series of banking crises, of varied proportions, affected most of those *de novo* banking systems, due to this lax institutional framework, inherited fragilities from the command economy period (the political need to support state-owned, inefficient industries, with the consequent accumulation of bad loans and also the financing of budget deficits), macroeconomic instability, risky expansion and

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[6] In the Baltic states, already in 1987, as part of the Gorbachov reforms, the monobank Gosbak (which formed the financial system, together with an emissions bank) had spun-off five specialized banks in all URSS republics (Savings, Agriculture, Social, Industry and Construction, and Foreign Trade: a somewhat similar specialization was to be found in most other centrally planned economies, with, at least, a "central bank", a savings bank and a foreign trade one).

[7] Levine (2002), after performing a panel analysis of large number of countries, concludes that either bank or market-based (i.e., via stock markets) financial systems can be growth-enhancing: what actually is relevant is the overall development of financial sector and, specially, *the quality and effectiveness of the institutional framework* (contract enforcement, investor protection, etc.).

[8] Sometimes almost comically so: as an example, in the early 1990s, Latvia allowed the creation of a bank –appropriately called Olympia Bank– just to finance the Latvian Olympic team.

investment strategies and also sheer inexperience, both from the investors and from regulators. Progressively, the re-capitalization, privatization and internationalization of the banking system (mostly into the hands of EU financial conglomerates), coupled with the implementation of a more robust, EU-modeled institutional framework, did away with most of those problems.

Two of the worst cases where the set of Baltic banking crises and the Bulgarian episode, which are described in more detail on Box I below. Other smaller banking crises happened in Estonia in 1994 and 1998, and in Latvia in 1994. Caprio and Klingebiel, 2003, report smaller episodes of "financial sector distress" in the Czech Republic (94-95), Hungary (93), Poland (91-93),[9] Romania (98-00), Slovakia (97) and Slovenia (92-94).

The initial proliferation of banks was, quite naturally, followed by a process of consolidation and strengthening –parallel to the privatization of the remnant state-owned components of the financial system– of the banking sector in most of those economies (in Bulgaria, from 81 banks in 1992 to 35 in 2001, in the Czech Republic from 55 in 1995 to 38 in 2001, Estonia, from 42 in 1992 to 7 currently, while Hungary had 33 banks in 2002, showing only a very slight decrease from the early 1990s,[10] Latvia from 56 in 1994 to 23, Lithuania from 27 in 1993 to 13,[11] in Poland from 81 in 1995 to 71 in 2001,[12] in Romania from 45 in 1998 to 41 in 2001,[13] in Slovakia from 22 in 2000 to 19 in 2001, and in Slovenia, where the number fell from 25 to 21 during 2001 alone[14]).

This consolidation process was frequently led by foreign companies, which now hold the majority of the assets of the banking system in virtually all of them –contrary to the situation in the current EU Member States– bar Slovenia.[15] This process now has

[9] Reininger et al., 2002, estimate the costs of the re-capitalization programs to have reached 12% of the GDP for the Czech Republic, 7% for Hungary and 1.4% for Poland, for the late 1990s. Caviglia et al., 2002, quotes much higher numbers (25%, 13% and 8%), but those figures are for the whole 1990s.

[10] Plus 8 credit institutions, and 191 savings and credit cooperatives.

[11] Plus 41 credit unions.

[12] Plus 642 cooperative banks.

[13] Plus 925 credit cooperatives and an astonishing *4,439* credit unions.

[14] Plus 45 savings and loans institutions.

[15] In Bulgaria, around 80% of the assets of the banking system are foreign owned, 95% in the Czech Republic, 63% in Hungary, 70% in Poland, 55% in Romania, 83% in Slovakia. In the Baltic republics, around 98% of assets in Estonia, 68% in Latvia, and 87% in Lithuania are foreign owned (see Sörg et al., 2003, ibid). Especially for Estonia, were 82% of the assets are Swedish-held, this may imply a

a component of regional expansion of the Eastern European banks themselves, or, more precisely in most cases, the regional expansion of Western banks via some of their locally-owned subsidiaries (see Sörg et al., 2003, ibid). The share of banking assets to GDP, nevertheless, is still far below the Euroarea average (which stood at around 265% of GDP by end 2001), compared with 47% in Bulgaria, 136% in the Czech Republic, 72% in Estonia and Latvia, 32% in Lithuania, 63% in Poland, 60% in Hungary, 30% in Romania, 96% in Slovakia and 94% in Slovenia (data also for 2001).[16]

Another peculiar feature of the banking system in the region is that foreign currency lending –usually euro-denominated[17]– to *residents* is very high, especially in the Baltic republics: with 80% of total loans in Estonia, 56% in Latvia and 61% in Lithuania. Also, the Baltic countries have substantial shares of deposits by non-residents, with over 10% in Estonia and Lithuania and close to 5% in Latvia (Latvia, with its close trading ties to Russia, has a particular strategy of selling itself as a stable financial services center to CIS depositors: see IMF, 2003(b), ibid).

The supervision system has also substantially improved, and, following recent international –and EU- best practice, is now centered in independent universal supervisory agencies in the most advanced of those countries[18] (Reininger et al., 2002, ibid., estimate that the *formal* regulatory environment for the Czech Republic, Hungary and Poland is actually above the EU, and that its *actual* enforcement level is at its average; Liive, 2003, gives a description of the Estonian experience that culminated in the creation of the EFSA –Estonian Financial Supervisory Authority- in January 2002).

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higher likelihood of exposure of its financial system to parent bank country-specific shocks (which also depends on the degree of diversification of assets of the parent bank: see IMF, 2003(b)). Slovenia is the "laggard", with 25.3% of the banking system still state-owned (Romania has the highest share of state-ownership, with 42%), and only 28% foreign owned –which, nevertheless, was an almost doubling of the share, just between 2001 and 2002.

[16] Part of this financial shallowness is due to the fact that a substantial part of the investment financing for companies is done via inter-company financing, due to the large share of foreign ownership, and due to direct commercial financing with non-resident banks. The latter also happens, to smaller degree, with commercial credit to households (see Reininger *at al*, 2002, ibid., and Caviglia at al., 2002, ibid.)

[17] The potential exposure to currency risk caused by this is somewhat limited by the fact that several of the ACs –namely, Bulgaria, Estonia and Lithuania– have euro-based currency boards and all of the ACs are, of course, prospective members of the euro area.

[18] Garcia Herrero and Del Rio, 2003, find no significant difference in terms of financial sector stability between central bank-centered and independent financial supervisory authorities. Schinasi, 2003, describes the rationale for central bank-centered financial supervisory authorities.

Box 1. Banking Crises in Eastern Europe

The Baltic bank crises were, to different degrees, linked to liquidity difficulties related to relations with Russia (in the November 1992 Estonian case, by the freezing of assets held by some Estonian banks in their former Moscow headquarters, while the Latvian and Lithuanian episodes of, respectively, March and December 1995, were caused by the drying-up of lucrative trade-financing opportunities with Russia, whose export commodities, at that time, were still below world price levels) and regulatory tightening (Latvia, Lithuania), compounded by the elimination of credit opportunities with the implementation of the Estonian and Lithuanian CBAs (Currency Board Arrangements). In Lithuania, as in Bulgaria, the financing of the budget deficit also played a role. In the Estonian and Latvian cases, around 40% of the assets of the banking system where compromised, in the Lithuanian and Bulgarian cases, around a third.

The Bulgarian 1996-1997 crisis eliminated a third of its banking sector, and led the country to hyperinflation (reaching over 2000% in March 1997, see Yotzov, 2002). Its roots lie in the political instability that preceded it (which, on its turn, led to inadequate real sector reform, with state-owned, loss making enterprises being financed via the budget deficit or through arrears with the, at the time, still mostly state-owned part banking sector: those arrears were, in turn, partially monetized by the Bulgarian National Bank –BNB- and the largest state bank, the State Savings Bank -SSB). Periodic foreign exchange crises (March 1994, February 1997) and bank runs (late 1995, late 1996, early 1997) were part of this picture. The implementation of tighter supervisory procedures during 1996 (giving the BNB the power to close insolvent banks), and a tightening of policy actually led to more bank runs. A caretaker government in February 1997 (before a newly elected government took power in May) paved the way to longer lasting reform and the implementation of the CBA, with its tighter budget constraints towards both the government and the banking sector. This reform process happened with the support from multilateral institutions (namely, the IMF).

4 Stock Markets

The existence of stock markets is assumed to be beneficial for economic performance. In principle, it provides a way for companies to raise capital at lower costs than through simple banking intermediation, and because it is not as restricted a source of capital as internal financing. Also, it is assumed that the existence of alternative modes of finance may reduce the likelihood of credit crunches caused by problems with the banking sector (see Greenspan, 2000). Additionally, the existence of external ownership is (or was, given the recent problems with market-based governance in the US and the EU, and the shift towards a more regulated environment) assumed to provide better governance for the management of firms. The majority of economic analyses seem to support the position that a diversified financing mix is positive for economic growth and stability.

As described in the previous section, all the financial sectors in the future Member States are bank-centered, with stock markets playing marginal roles in most of them (and, in some, a *very marginal* role: in Bulgaria, Slovakia and Romania, their average market capitalization in GDP terms is below 5%: see Figure I below).

Table 3. Date of (Re-)Creation of Stock Exchanges.

Country	Date of Creation of Stock Exchange
Bulgaria	-5/92: First Stock Exchange begins trading (up to 20 regional ones created); 10/97: The Bulgarian Stock Exchange-Sofia (resulting from the consolidation of the previous ones) opened. Stock index available from 1/98
Czech Rep.	4/93: Current Stock Exchange begins trading. Stock index available from 5/94
Estonia	-5/96: Foundation of Tallinn Stock Exchange; 2/02: Merge with Helsinki Stock Exchange (HEX). Stock index available from 6/96
Hungary	-6/90: Stock Exchange (re-) established. Stock index available from 2/91
Latvia	-12/93: Stock Exchange established. 8/02: Finnish HEX acquires Riga Stock Exchange and Depositary. Stock index available from 2/96
Lithuania	-9/93: Stock Exchange trading begins. Stock index available from 1/96. 3/04: Finnish HEX acquires Lithuania National Stock Exchange.
Poland	-4/91: Warsaw Stock Exchange re-opened. Stock index available from 5/91
Romania	-11/95: Stock Exchange begins to operate. Stock index available from 5/98
Slovakia	-4/93: Stock Exchange begins trading. Stock index available from 9/93
Slovenia	-12/89: Stock Exchange established. Stock index available from 1/94

All of these countries had (re-)established stock markets[19] by the mid-90s[20] (see Table III above). About half of the future Member States used them to drive the initial process of re-privatisation, either via mass issues of voucher certificates for residents (the most famous case of this strategy was the Czech Republic), or via IPOs (Initial Public Offerings) re-privatisation processes,[21] to lock-in domestic and foreign strategic investors (see Claessens at al., 2000). In the voucher-driven privatization, the initial large number of investors and traded stocks in those stock markets was soon concentrated in a rather limited number of institutional investors –domestic and foreign- and "blue chip" stocks.[22] In the IPO-driven markets, the number of stocks and investors actually tended to increase with time, albeit from a rather concentrated base.

Even in the largest ones, nevertheless, market capitalisation, as a GDP share, was and remains rather low (see Figure I below), and far below the EU average (around 72% of GDP). Only in the Czech Republic, Estonia[23], Hungary and Slovenia the average market capitalization is above a 20% GDP share, while in Romania is *below* 1% in several years.[24] Also, the average market turnover is equally below the one observed in comparable EU economies. Similarly to what is observed in the banking sector, the initial regulatory environment was deliberately lax, and the regulators were plagued by much the same problems of inexperience and limited number of staff and resources.[25]

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[19] One must not forget that those were mostly integrated market economies before the disruptions caused by the Second World War and the posterior Russian occupation: The Warsaw Stock Exchange was created as early as *1817*, and the first Prague stock market was created in 1871 (see Bhattacharya and Baouk, 2002).

[20] The former Federal Republic of Yugoslavia, of which Slovenia was a part, combined from early on elements of a market economy with its command system: its stock market, was, therefore, (re)created sooner, in 1989.

[21] Namely, in Estonia, Latvia, Hungary, Poland and Slovenia.

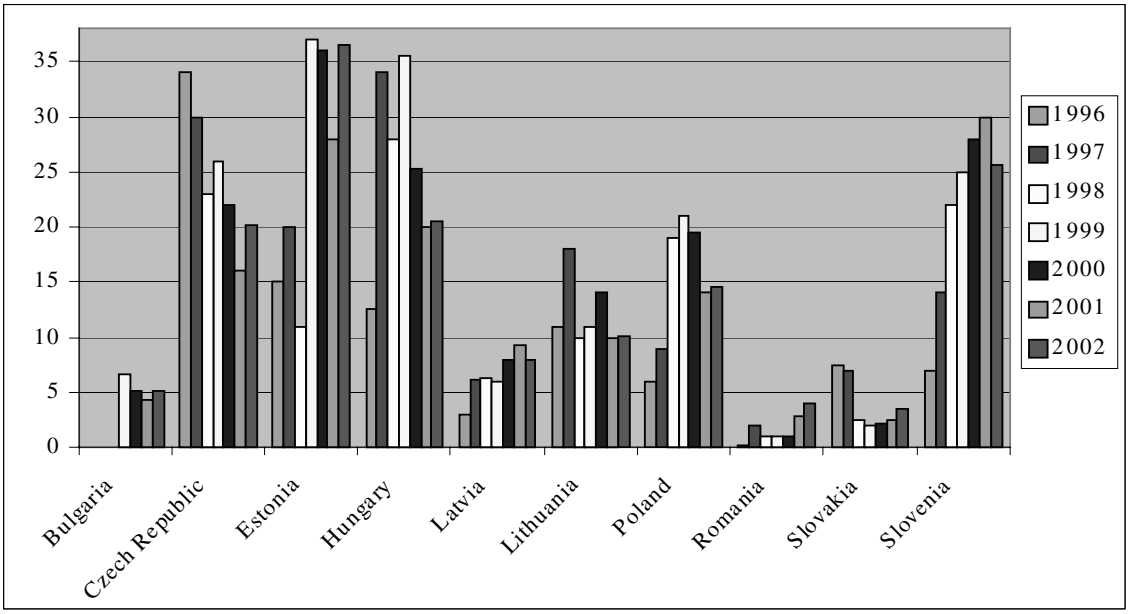
[22] Due to this, Ihnat and Prochazka, 2002, put the *real* Czech equity market capitalization at about *half* of its apparent GDP share.

[23] Estonia, with the highest share, close to 40% of GDP, above even Hungary, an "early reformer", is an interesting case, especially when one considers that this was done basically by attracting strategic foreign investors via IPOs (as indicated above) and *without any significant market for government debt* –contrary to Latvia and Lithuania– as Estonia is constitutionally required to hold a balanced budget (see IMF, 2003(b), ibid.). On the other hand, on the Central European economies with larger stocks of public debt and average public deficits (see Vinhas de Souza and Borbély, 2003), the existence of a public debt market may have helped those stock markets (see Reininger at el., 2002, ibid).

[24] Pogonaru and Apostol, 2002, blame this dismal performance on a failed "voucher" mass privatization process and on a general policy inconsistency towards reforms.

[25] In some cases, the regulatory structure was not even created, as was the initial situation in the Czech Republic.

Figure 1. Equity Market Capitalization as a GDP Share, 1996-2002.



Source: Claessens at al., 2003, modified by the author.

This does not mean that domestic agents in those countries lack access to the financial services supposed to be provided by stock markets: the very process of opening up, the increase in cross-border trade in financial services, the harmonization of rules for capital trading with the EU (including the ongoing efforts of the Lamfalussy Committee towards a single European market for securities: according to the current proposal, small and medium size firms would be able to use a simplified prospectus valid throughout the EU and choose the country of its approval), plus the development of information technology, all imply that is not actually necessary –nor economically optimal, given economies of scale– for each individual country to have its own separate stock market.[26] One must also recall that the current national stock markets in the

[26] As a matter of fact, three of the stock markets in my sample, Estonia, Latvia and Lithuania, had their Stock Exchanges acquired by the Helsinki Stock Exchange –HEX- between 2002 and 2004. The HEX itself merged with the Swedish Stock Exchange -OM- in May 2003. There are also several overlapping regional associations and linkages with other EU stock markets, like the i) co-operation between all Baltic stock exchanges formalized by a memorandum of understanding signed in April 1999, which quotes a joint list of Baltic companies, ii) the establishment of a joint index of Central European Stock Exchanges, known as CESI Index, which has been calculated by Budapest Stock Exchange since July 1996 and comprises the most liquid securities from the Bratislava, Budapest, Prague and Warsaw exchanges, or iii) the NEWEX, established in November 2000 as a joint venture of the Frankfurt and Vienna Stock Exchanges to list Central Eastern European stocks. The Bulgarian Stock Exchange and the Athens Stock Exchange also signed a memorandum of understanding in 2001. This actually mirrors developments among stock markets in the more mature EU markets, like the merger of the Belgian, Dutch, French and Portuguese national stock exchanges that resulted in the creation of the

mature developed economies are themselves the result of process of consolidation –and closing- of smaller *regional* stock markets (as was observed in Bulgaria in the early 1990s), which still today coexist with larger, dominant national stock exchanges even in some mature markets, like Germany and the US.

Nevertheless, the observed tendency of *domestic* larger companies, with presumed better growth prospects, to list abroad (see Table IV below), due to the obvious cost[27] and liquidity advantages of the larger international stock markets, does seems, on balance,[28] to deprive those stock markets of liquidity (see Claessens at al., 2003). On the other hand, non-residents seem to play a major role in most of those markets (accounting for 77% of the capitalization in Estonia, 70% in Hungary and half of the *free-float* capitalization in Lithuania).

EURONEXT, the HEX-OM merger and the NOREX, the loose association the Scandinavian stock exchanges.

[27] Domowitz et al., 2000, estimates that the total trading costs in the Stock Markets of Budapest and Prague were *three times* higher than the ones observed in Germany and the US.

[28] On the other hand, a foreign listing may also increase domestic trading, if this foreign listing is perceived by domestic investors a sign of quality of a particular stock. Also, foreign stock trading may, in principle, also be unwound at the domestic stock market itself.

Table 4. Listed Firms and Cross Listings

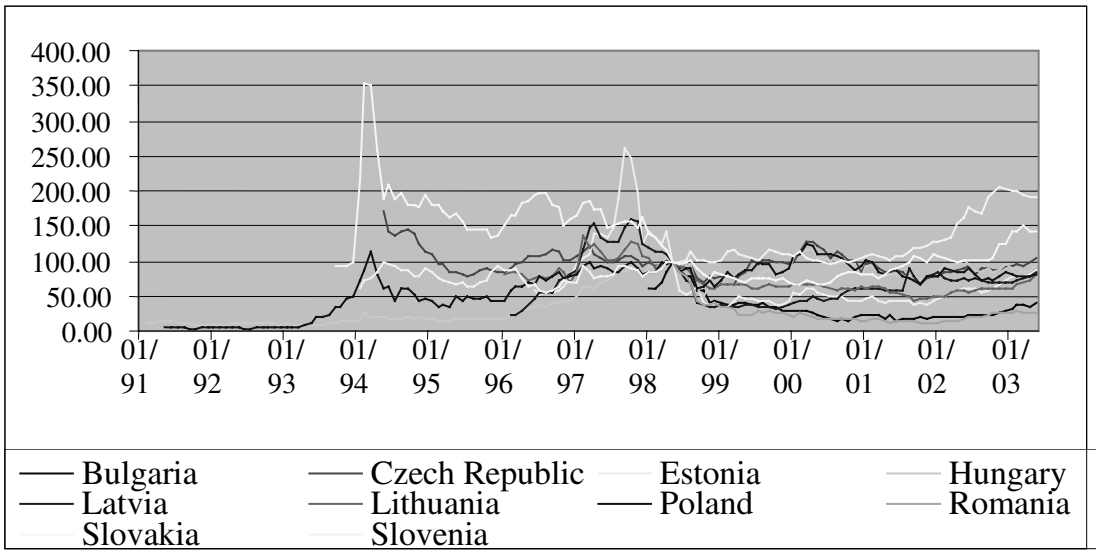
	Market capitalization of Internationally Listed firms/Total Market Capitalization (%)	Value Traded Abroad/Value Traded Domestically	Number of Cross Listed Firms	Share of Cross Listed Firms	Total Number of Listed Issuers
Bulgaria	N.A	N.A	N.A	N.A	30*
Czech Republic	98.90	11.8	40	36	111[P]
Estonia	95.30	84.7	8	44.4	18
Hungary	99.80	14.6	52	74.3	70
Latvia	0.30	0.6	2	12.5	16
Lithuania	42.40	337.3	5	11.4	44[§]
Poland	81.30	62.5	30	12.2	246[N]
Romania	N.A	N.A	N.A	N.A	63
Slovakia	76.20	N.A	6	23.1	26
Slovenia	7.00	5.9	2	1	189
Average	62.60	73.9	14.5	26.9	81.3

Source: Claessens at al., 2003, modified by the author; *In the "Official Market", in the "Free Market" for small caps, another 372 (in 2001); [P]It is estimated that only 15 shares are actively traded; [§]In the "Official Market" only *six* companies are listed; [N]Due to legal reasons, major foreign-owned banks are forced to list on the Warsaw Stock Exchange: they are believed to be responsible for a full third of the market capitalization, while 90% of the "free float" is done by just 20 stocks.

All the specific questions described above concerning the way those stock exchanges were founded and their later developments, plus their relative smallness and shallowness, affect the dynamics of their stock market indexes (SMI),[29] and are clearly reflected by them (as one may see in Figure II, below). This, coupled with the rather limited duration of the series, may affect their adequacy as proxies of financial cycles, as one will see on Section 7.

[29] Reininger et al., 2002, ibid., estimate that for the Czech Republic, Hungary and Poland, *five* stocks are responsible for 50% of the weight of the respective stock market indexes.

Figure 2. Stock Market Indexes



Source: Datastream, modified by the author. The price indexes here were converted to US Dollars and re-based to a common reference period were they equal 100, May of 1998. The country codings are as described in the Annexes.

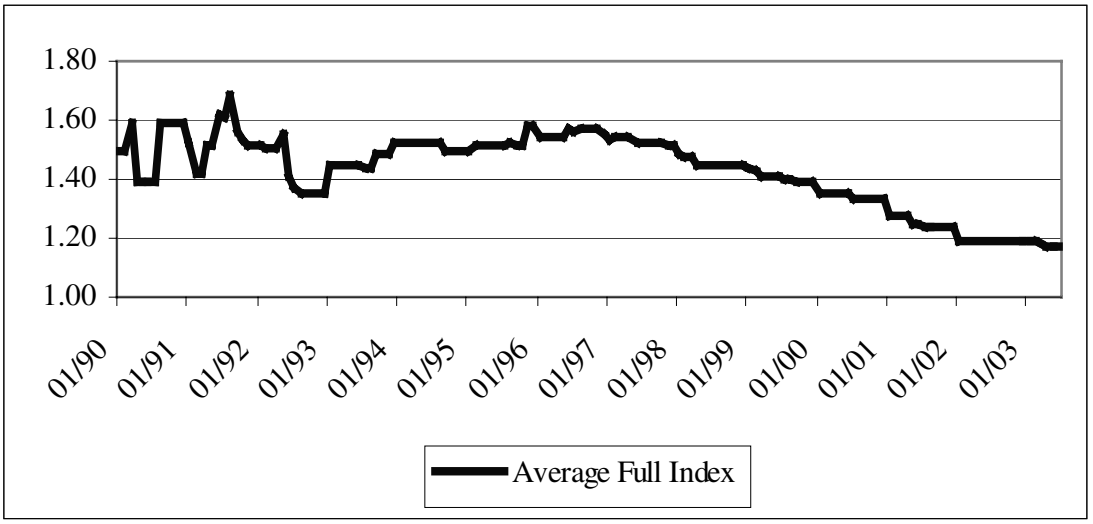
5 Estimated Indexes

The construction of the index for this new sample of countries was the core of this work. A comprehensive effort was done to crosscheck the information collected from papers and publications with national sources.[30] Below I present the estimated monthly index, for the period January 1990 to June 2003 (see Figure III). The base data for its construction was collected from IMF and EBRD publications, then exhaustively verified both with national sources and with works written about the individual countries and the region. This is an index that falls with liberalization, where maximum liberalization equals *one* and minimum *three* (in this sense, one could actually see it as an index of financial *repression*). As an additional robustness check, the year-end value

[30] The author would like to thank the Austrian National Bank (Jarko Fidrmuc), Bank of Bulgaria (Nikolay Nenovsky), Czech National Bank (Vit Barta and Michal Slavik), Bank of Estonia (Raoul Lättemäe), National Bank of Hungary (Ágnes Csermely and Zoltán Szalai), Bank of Latvia (Zoja Medvedevskiha and Martins Prusis), Bank of Lithuania (Violeta Klyviene), Bank of Poland (Mariusz Jarmuzek), Bank of Romania (Dorina Antohi), National Bank of Slovakia (Juraj Janosik), Bank of Slovenia (Janko Tratnik and Karmen Juren), Bratislava Stock Exchange (Andrea Hippova and Monika Zabadalova), Budapest Stock Exchange, Ljubljana Stock Exchange (Barbara Meza), Prague Stock Exchange (Eva Hoskovcová), Riga Stock Exchange (Inese Purgaile), Sofia Stock Exchange (Pantaley Karasimeonov), Tallinn Stock Exchange (Sandra Meigas), National Stock Exchange of Lithuania (Arminta Saladziene), Warsaw Stock Exchange (Monika Matlak) for their help in the construction of the liberalization index used here.

of the index here constructed was regressed on the combined EBRD's yearly indexes of banking sector reform and non-banking financial sector reform. The results from a panel regression with the index constructed here on the LHS and the EBRD index on the RHS yield a coefficient of .60, and correlations among the individual country-specific index series range from -0.91 to –0.35.

Figure 3. Average Full Liberalization Index.

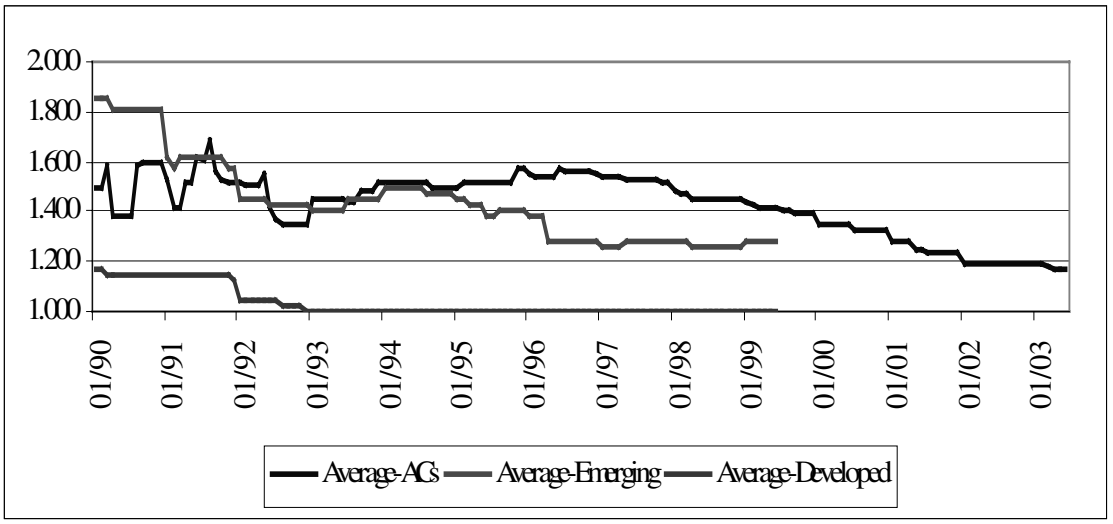


As one may see from Figure III above, the process of integration and liberalization was almost continuous throughout the 1990s and early 2000s. The spikes in the "Full Liberalization Index" in the early 1990s do not indicate reversals: the merely reflect the entry into the sample of they newly independent Baltic republics. As former members of the Soviet Union, they "enter" the world as highly closed economies, but those countries introduced liberalization reforms almost immediately from the start. After this, a slight increasing trend, that does reflect a mild liberalization reversal, is observed, starting mid-1994 and lasting *until* early 1997, from when a continuous liberalization trend is observed: this reversal will be explained below. Noteworthy here is the fact that *virtually none* of the obvious candidates for a reversal of liberalization (the 1997 Asian Crisis, the collapse of the Czech monetary arrangement in 1997, the collapse of the Bulgarian monetary arrangement in 1996/97, the 1998 Russian Crisis, the 1999-2001 oil price shocks –as all those economies are highly

dependent of imported energy sources) seems to have driven these mild liberalization reversals.

Comparing the Full Index constructed here with the one constructed by K&S, for similar time samples, one may observe that the ACs start substantially below the average level of other emerging markets –i.e., they are *more* liberalized, but both the "entry" of the initially less liberalized former Soviet republics, plus continuous liberalization efforts in the emerging market K&S set reverse this situation. A similar liberalization reversal trend in both the ACs and the merging market set is observed from early 1994, but it is actually slightly stronger on the ACs sample, until its reversal in 1996. By the end of my sample, the ACs are clearly below the final value for the emerging set in K&S's sample. This sort of remarkably fast pattern of the ACs' "leap-froging" towards best international practice is also observed in several types of institutional frameworks, like, for instance, monetary policy institutions and instruments (see Vinhas de Souza and Hölscher, 2001): a process that virtually took decades for Western central banks was compressed in a half a dozen years in the Future Member States. Nevertheless, by the end of the sample, both emerging and ACs are still above the level of mature, developed economies.

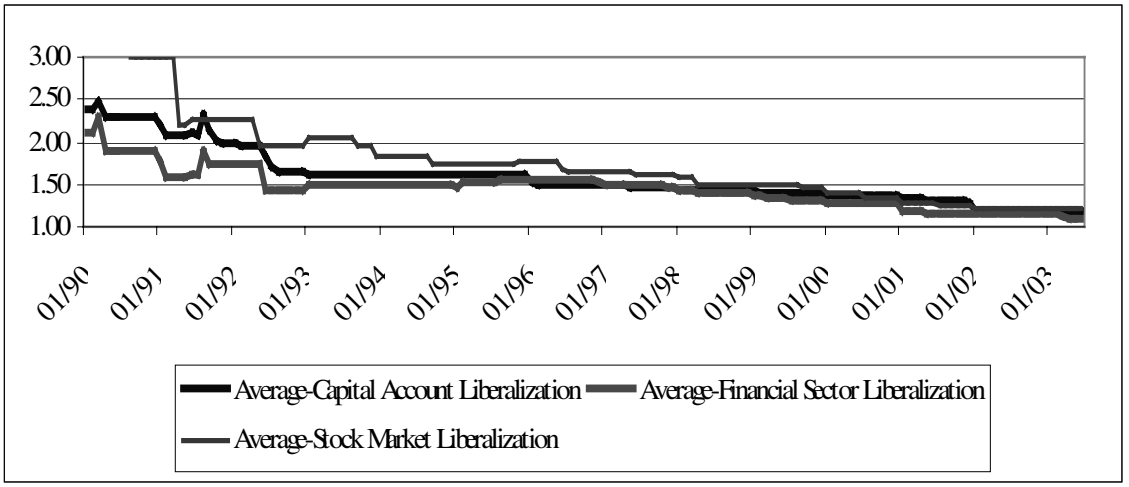
Figure 4. Comparing the Liberalization Indexes



Analyzing the individual components of the index (see Figure V next page), one may see that, abstracting again from the initial spikes in the index, which are, as

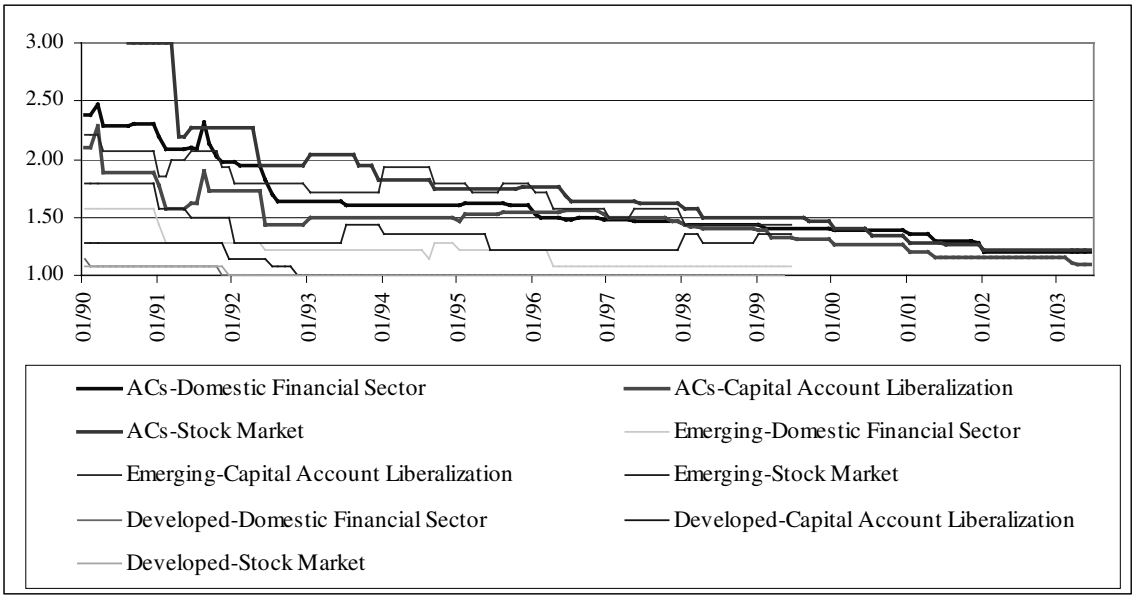
explained above, caused by the addition of new countries to the sample, the 1994/1997 reversal of liberalization was essentially driven by the *Financial Sector* liberalization component. As will become clear with the country specific analysis below, this was related, in most cases, to –and here it must be stressed that those were rather limited reversals- to the banking crises that plagued several countries in my sample in the early to mid 1990s.

Figure 5. Individual Components of the Liberalization Index



Comparing now the individual components of the Full Index constructed here with the ones from K&S, again for emerging and mature economies, it becomes clear that the reversals observed in Figure IV were driven by different sources in the emerging set (increase in capital account restrictions) and ACs set (financial sector): see Figure VI below. All the indexes for mature economies are, again as one would expect, substantially lower.

Figure 6. Comparing Individual Components of the Liberalization Indexes



One could, in principle, aggregate the countries in my sample in three different groups: rapid liberalizers (the ones that followed a "big bang" early approach, without major reversals: Bulgaria, Estonia, Latvia, Lithuania), consistent liberalizers (the ones that followed a more delayed path, but also without major roll backs: the Czech Republic, Hungary, Poland) and cautious liberalizers (the ones whose liberalization path was either openly inconsistent or downright mistrustful: Romania, Slovakia, Slovenia).

Table 5. Values of the Full Index by Country

	Average Index	Initial Value of Index	Final Value of Index
Bulgaria	1.17	2.37	1.00
Czech Republic	1.21	1.30	1.00
Estonia	1.53	3.00	1.00
Hungary	1.81	2.47	1.00
Latvia	1.21	3.00	1.00
Lithuania	1.35	3.00	1.20
Poland	1.68	2.30	1.53
Romania	2.05	2.83	1.60
Slovakia	1.93	2.40	1.30
Slovenia	1.92	2.13	1.07

6 Financial Cycles and Liberalization

The financial cycle coding which is used by K&S defines cycles as a at least twelve month-long strictly downwards (upwards) movement, followed by an equally upwards (downwards) 12-month movement from the through (peak) of *a stock market index*, measured in USD, as they should reflect returns from the point of view of an international investor. As described in the stock market section of this work, one must be warned that there are specific factors in the countries in my sample that may affect the effectiveness of a stock market index as an adequate proxy of financial cycles, at least for the sample here considered. Beyond that, these series have a rather limited time extension (my sample covers the 01:1990-06:2003 period).[31] As an alternative to K&S criteria, I use the Bry and Boschan (1971) developed a nonparametric algorithm determine turning points (see the Annex). With this procedure I find 45 cycles, 22 upward and 23 downward, in all countries but Romania.

[31] Questions concerning the adequacy of this measure are not restricted to emerging markets: for instance, after the end of the longest recorded continuous expansion and the "bursting of the bubble" in the US in 2000, the Dow Jones index lost over 3000 points between January 2000 and December 2002 (conveniently after the end of K&S's sample), or over a full quarter of its value, without any changes in financial liberalization in the US. Other major stock indexes suffered even greater –and almost continuous– losses: in a similar time period, the UK's FTSE-100 fell from over 6750 to below 3500, while the German DAX fell from over 7500 to below 2500, also without changes in liberalization.

After this procedure, following K&S, I estimate their core regression, given by

$$amplitude_i = \alpha\, X_i + \rho_1 d_i^r + \beta_1 d_i^{sr} + \lambda_1 d_i^{lr} + \varepsilon_i \qquad (1)$$

where the variable *amplitude* is two series with the amplitudes of the downwards or upwards movement of a stock market index, calculated as the depth of the contraction (height of the expansion). Following K&S, this is estimated as the change between peak (trough) and the following trough (peak) of the cycle identified as above, and them as a percentage of the average value observed during this cycle for country *i*. X_i is a matrix of control variables (which includes the world real interest rate –here defined as the US Prime Lending Rate minus the CPI inflation in time *t*, world output growth, here represented by a linear combination of the monthly log industrial production series for the US, Germany and Japan, and domestic output growth, here proxied by the monthly log industrial production series for each country) with their average value during the cycle, while d_i^r is a dummy variable that equals one if the cycle occurs during "non-liberalized" periods, while d_i^{sr} is the "short-run" dummy that equals one if the cycle occurs shortly after liberalization, and while d_1^{lr} is a "long-run" dummy that equals one if the cycle occurs a longer time after liberalization.[32]

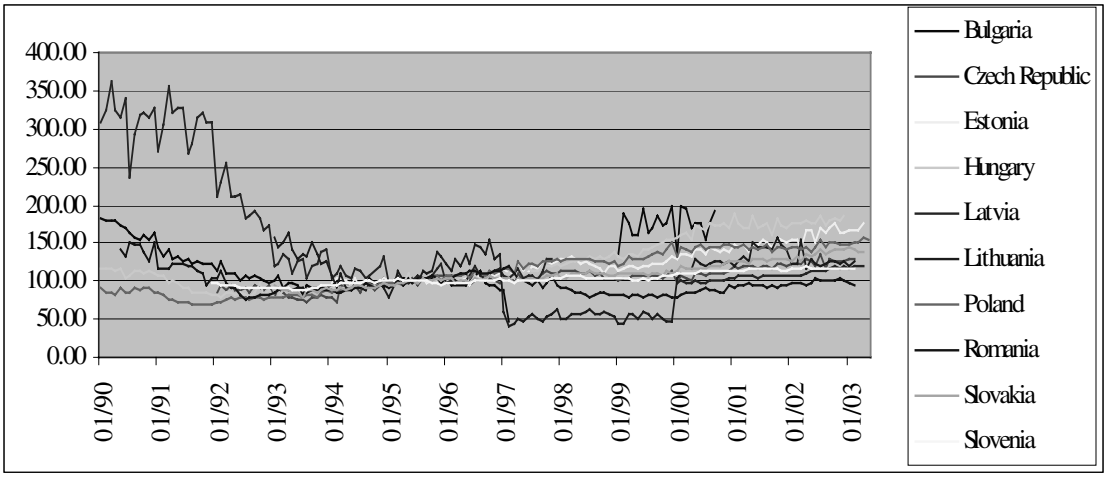
Again, one must be warned about some features concerning the industrial production indexes for this sample of countries: beyond their short time span, they are affected by the so-called "transition" recession: the *stylised* pattern of post-reform growth of a transition economy is characterized by a sharp initial fall followed by recovery and growth.[33] The opening-up and the onset of market prices made some sectors uncompetitive virtually overnight. This, coupled with the traditional "over-industrialization" of the former centrally-planned economies, plus the early collapse of their Eastward-biased trade linkages had substantial effects on the level and

[32] K&S use the –admittedly arbitrary– windows of 48 months and 60 months (4 and 5 years) to characterize their short and long runs. They state that their results are robust to the change in dimension of those "windows". As the aim of this work is to extend theirs, I use the same short and long run windows.

[33] For a stylized description of this general post-transition "U-shaped" growth trajectory (with some exceptions, like Belarus), see Havrylyshyn et al., 1998, Fischer and Sahay, 2000 and Bakanova et al., 2004. Most of the ACs had reached their "pre-transition" GDP levels –and some surpassed them- by the early 2000s.

composition of their industrial output (in Lithuania, the most extreme case in my sample, for instance, the industrial production index lost almost 70% of its original value). This instability can be clearly seen in Figure XVII below.

Figure 7. Industrial Production Indexes



Source: Datastream and National Statistical Offices, modified by the author.

6.1 Estimations

With the provisos above, I perform a heteroskedasticity-consistent OLS estimation. The results are show in Table VI below[34]. As one may see, the R^2 is relatively low, there signs of heteroskedasticity, world output is significant in upward cycles with a positive sign, while the other variables in the control set are non-significant, and all have rather small point estimates[35]. Concentrating on the coefficients of main interest to this analysis, the financial repression variable (here represented by a dummy that equals one in periods without partial or full liberalization, defined as above, and zero otherwise) is significant in upward cycles, as are the short and long run dummies. Financial

[34] Those results are from regressions after the correction of three "outliers" detected after the inspection of the residuals of a regression with all observations (corresponding to one Polish upward and one Polish downward cycles, almost right at the beginning of the sample, and to a Latvian upward cycle during the height of the "Asian Crisis"). The elimination of these three "outliers" almost *trembles* the R^2 of the regressions, *halves* its standard error and improves significantly the Durbin-Watson statistic, but without changing *qualitatively* the significance or sign of the variables. *Quantitatively*, the estimated value of the duration increase of the upwards cycles and of the decrease of the downward cycles post-liberalization falls substantially.

[35] The usage of a German "world" real interest rate makes this variable positive significant with a substantially larger point estimate, but in the "upward" cycle regressions only, and without affecting significantly the other variables.

liberalization increases the amplitude of upward cycles by around 5.6% in the short run[36] (the K&S estimate for emerging markets is 37%, and 51% in mature ones) and by 9.4% in the long run, when compared to the period of financial repression (the K&S estimate for emerging markets is a long run *decrease* of 25%, and of 10% in mature ones)[37]. On the other hand, crashes decrease with liberalization by 15% in the short run (in K&S, crashes in emerging markets *increase* their amplitude by 28% in the short run, and decrease by 20% in mature markets), and by 25% in the long run (in K&S, crashes decrease by 12% in emerging markets and by 43% in mature markets in the long run), albeit the coefficients are not significant for the downward cycles.

Table 6.

Included observations: 22 (up) 23 (down)	Upward Cycle		Downward Cycle	
Variables	Coefficient	Std. Error	Coefficient	Std. Error
World Real Interest Rate	0.07	0.01	-0.04	0.02
World Output	-0.03*	0.00	-0.00	0.01
Domestic Output	0.00	0.00	0.00	0.00
Financial Repression Dummy	2.33***	1.25	0.68	0.81
Short Run Liberalization Dummy	2.46***	1.39	0.58	0.91
Long Run Liberalization Dummy	2.55***	1.36	0.51	0.88
Constant now show. * and *** indicate significance at the 1% and 10% levels, respectively.	R^2: 0.35	DW: 1.36	R^2: 0.26	DW: 1.48

Bearing in mind the limited number of observation, and the fact that the series were buffeted by country specific (for instance, "transition" itself, which happened in different moments for different countries, the banking crises described above) and common shocks (the Asian, Russian and oil price shocks), which affect the significance of the results, one can preliminarily state that there are some signs that the K&S inference that financial liberalization has short run costs for emerging markets is not observed in my ACs sample.

[36] This value corresponds to the percentage increase of the coefficient "Short Run Liberalization Dummy" when compared with the coefficient "Financial Repression Dummy", and similarly to the "Long Run Liberalization Dummy".

[37] Edwards et al., 2003, confirms those significant "excess returns" emerging markets when compared to mature ones, and considered them to be a necessary reward for the higher volatility.

6.2 Institutional Reform and EU Accession

The institutional underpinnings of the liberalization process are essential to the analysis performed here, as one of the aims of this work is to test if the EU institutional framework imposed by the Accession process is what enabled them to derive the previous welfare-enhancing results from liberalization. K&S, in their work, represent the "quality of institutions" via a dummy series based on the monthly ICRG (International Country Risk Guide) "Law and Order" index, which assumes a value of one if the index is growing or at its maximum (the ICRG index itself has a maximum value of six, with three granted to the "law" component and three to the "order" one). K&S also use information on insider trading laws and enforcement, taken from Bhattacharya and Baouk, ibid, 2002. This work uses also the ICRG index, but not the data from Bhattacharya and Baouk, as the information in that paper doesn't fit neither the knowledge of this author concerning the level of legal enforcement in the sample of countries here used, nor with the conclusions of works like Reininger et al., 2002, ibid. Therefore, a modified version of K&S equation (2) is estimated, as given by

$$amplitude_i = \alpha X_i + p_1 d_i^r + \beta_1 d_i^{sr} + \lambda_1 d_l^{lr} + \tau_1 d_i^{L\&0} + \varepsilon_i \qquad (2)$$

where the new variable $d^{L\&O}$ is the dummy based on the ICRG Law and Order index. The results are show on Table VII below. They do not change qualitatively or quantitatively and the new "Law and Order" dummy is only in upward cycles, but with a peculiar, albeit small, negative sign (i.e., it reduces expansions).

Table 7.

Included observations: 22 (up) 23 (down)	Upward Cycle		Downward Cycle	
Variables	Coefficient	Std. Error	Coefficient	Std. Error
World Real Interest Rate	0.06***	0.03	-0.04	0.03
World Output	-0.03*	0.01	-0.01	0.01
Domestic Output	0.00	0.00	0.00	0.00
Financial Repression Dummy	3.08**	1.17	0.87	1.32
Short Run Liberalization Dummy	3.36**	1.31	0.76	1.37
Long Run Liberalization Dummy	3.25**	0.62	0.69	1.33
Law and Order Dummy	-0.25***	0.06	-0.28	0.78
Constant not show; ** and ** indicate significance at the 5% and 10% levels, respectively.	R^2: 0.45	DW: 1.32	R^2: 0.27	DW: 1.46

To specifically verify the hypothesis that the EU integration process was the main force driving the liberalization process, the same regression as on section 6.1 was run with dummies for the periods after i) the Europe Association Agreements were signed (EU_{ts}), ii) the date of official application for EU membership (EU_a) and iii) the date in which they entered into force (EU_t). The results are rather similar to the previous ones: upwards cycles significantly increase with liberalization and downward cycles decrease in the short run (albeit with somewhat stronger estimated effects, specially for the EU_t dummy regression), but they are only significant for the upward cycles on the regressions using a dummy for the date of official application for EU membership: it significantly *increases* them. Those are perhaps intuitive results, as one would expect some of the effects of the EU and Law and Order dummies to be captured by the liberalization dummies, but the assumption concerning the importance of the EU Enlargement process is *not* confirmed[38].

7 Beyond K&S: Alternative Estimations

Given the potential shortcomings of the previous analysis, which are derived both from limitations oF the original K&S framework and from the specific features of my

dataset, a set of alternative specifications was also estimated. Namely, other measures of *volatility*, both financial, real and nominal, were used as the LHS of the regressions below, namely, the standard deviation of i) the stock market index, ii) the industrial production index and iii) the changes in the nominal exchange rate, in rolling variance time-windows of 2 to 6 months (following Vinhas de Souza, 2002(b) and 2002(c)), as given by (3) below. The basic notion behind this is that liberalization and integration will affect, and in a more fundamental fashion, not just the cyclical, but also the overall real and nominal volatility of a given economy, albeit in a not unambiguous fashion (for instance, if financial integration leads to increased specialization, it could increase country-specific shocks: see Razin and Rose, 1994).

$$volatility_i = \alpha X_i + p_1 I_i + \varepsilon_i \qquad (3)$$

Now the X_i matrix of control variables includes, beyond the world real interest rate, world output growth, domestic output growth, a domestic nominal exchange rate index (re-based to May 1998, as the other indexes), the level of the S&P 500 equity index (equally re-based to May 1998), the domestic stock market indexes, dummies for a float exchange rate regime, a hard peg regime, a sliding peg regime for the specific country/period per regime (following Vinhas de Souza, 2002(b) and 2002(c), ibid) and, finally, the variable $\boldsymbol{I_i}$, for "index", which is either the full Liberalization Index or its three components. As the index is better seen as a measure of financial restriction, a positive sign will indicate that an increase in liberalization reduces volatility. The results for the 6-months variance window using the full sample, the most robust ones, are shown in Table VIII below (those results are from a fixed effects -deemed superior to a random effects one after a Hausman test- heteroskedasticity-consistent estimation)[39].

[38] Using together the "Law and Order" and EU dummies, these results remain mostly unchanged.

[39] The variables for world real interest rate, world output growth and the level of the S&P 500 equity index were replaced in the control set by the German real interest rate, the German Industrial production index and the DAX index. The results for those variables were almost always non significant when this was done.

Table 8.

Included observations: 920 (Stock Market), 927 (Industrial Production) and 929 (Nominal Exchange Rate).	Stock Market	Stock Market	Industrial Production	Industrial Production	Nominal Exchange Rate	Nominal Exchange Rate
Variables	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
World Real Interest Rate	0.0003	0.0002	0.02	0.02	0.003	0.00005
World Output Index	-0.004*	-0.004*	0.02	0.01	0.10*	0.1*
Domestic Output Index	-0.0004*	-0.0004*	0.01	0.01	0.004	0.005***
Nominal Exchange Rate Index	0.00005	0.00001	0.002	0.02	-0.001	0.00001
Standard and Poor Index	0.01***	0.01**	-2.11**	-2.02**	0.42	0.53
Domestic Stock Market Index	0.04*	0.05*	2.13**	2.55*	-1.21*	-0.83*
Float Dummy	-0.005	0.01**	1.86*	1.56**	-3.12*	-2.87*
Hard Peg Dummy	-0.04*	-0.01	2.38*	2.48**	-3.75*	-3.09*
Sliding Peg Dummy	-0.02*	-0.0002	1.76*	1.78**	-3.32*	-2.92*
Full Liberalization Index	-0.01*	_	-1.31**	-	-0.38	-
Capital Account Liberalization	_	0.05*	_	1.59**	_	1.83*
Stock Market Liberalization	_	-0.03*	_	-0.66***	_	-0.75*
Financial Sector Liberalization	_	-0.02*	_	-2.03*	_	-0.91*
Constant and country terms not show; *, ** and *** indicates significance at the 1%, 5% and 10% levels, respectively.	R^2: 0.33	R^2: 0.37	R^2: 0.48	R^2: 0.48	R^2: 0.60	R^2: 0.60

As one might see, the R^2s are similar to the ones on the previous regressions, the coefficients of the "control set" are rather small, but mostly significant (in a result similar to Vinhas de Souza, 2002(b) and 2002(c), almost all exchange rate frameworks significantly reduce the volatility of the stock market and nominal exchange rate variables, but increase the one of the industrial production series). Concentrating the analysis on the liberalization index variables, the full index significantly *decreases* the volatility of both the stock market and the industrial production index, but the point

estimate is only truly substantial for the industrial production series[40]. When the index is disaggregated on its components, one may see that the variability reducing effects are driven by capital account liberalization component, which has the highest point estimate of all components (bar the financial sector liberalization component on the industrial production regression), while the stock market and the financial sector components significantly increases volatility. These results tend to remain the same using a post-1996 sample. The main changes are that, beyond the one described on footnote 41, the stock market and the financial sector components become non-significantly on the stock market regression.

Adding the EU dummies used in the previous section to the regression below shows that *all the three dummies reduce volatility significantly in most cases*, leaving the other coefficients broadly unaffected. Peculiarly, when one uses the Law & Order dummy, it is non-significant on the industrial production regressions, increases volatility significantly on the stock market ones and reduces it significantly on the exchange rate ones, while rendering the liberalization index (full and components) insignificant on the industrial production and exchange rate estimations. When this is used together with the EU dummies, these results remain, but only the EU_t and EUa dummies are *always* significant, perhaps indicating the somewhat delayed effects of the Accession process on the legal framework and enforcement.

[40] This is very likely related to the "transition recession" adjustment. A short sample estimation that starts on 1996, i.e., after the bulk of the industrial restructuring was done, renders this coefficient non-significant.

Table 9.

Included observations: 218	Private Consumption	Private Consumption	Total Consumption	Total Consumption
Variables	Coeff.	Coeff.	Coeff.	Coeff.
World Real Interest Rate	-0006***	-0.0006***	-0.0012*	-0.0011**
World Output Index	-0.0016*	-0.0016*	-0.0017**	-0.0017**
Domestic Output Index	-0.0000	-0.0000	0.0000	-0.0000
Nominal Exchange Rate Index	0.0001*	0.0001*	0.0001*	0.0001**
Standard and Poor Index	0.0159***	0.0167**	0.0219***	0.0226**
Domestic Stock Market Index	0.0274*	0.0258*	0.0357*	0.0337*
Float Dummy	0.0164**	0.0075	0.0154	0.0065
Hard Peg Dummy	0.0267**	0.0191	0.0248	0.0168
Sliding Peg Dummy	0.0091**	0.0002	0.0072	-0.0018
Full Liberalization Index	0.0008	_	-0.0006	_
Capital Account Liberalization	_	-0.0111	_	-0.0131
Stock Market Liberalization	_	0.0121**	_	0.0119
Financial Sector Liberalization	_	-0.0082	_	-0.0074
Constant and country terms not show; *, ** and *** indicates significance at the 1%, 5% and 10% levels, respectively.	R^2: 0.31	R^2: 0.32	R^2: 0.25	R^2: 0.26

From a more theoretical point of view, financial liberalization and integration should also enable a reduction of the volatility of consumption, as it would allow better international risk-sharing opportunities (see Obstfeld and Rogoff, 1998). Given that, I also estimated the regression above using three quarters standard deviation series of consumption --both private and total, i.e., including government consumption expenditures- as a GDP share as the dependent variable. As this data is available only on a quarterly basis and for shorter time samples, the number of observations is substantially reduced. The results are on Table IX above. As one might see, the R^2s are again somewhat small and now also all the point estimates are rather small. More importantly, all the liberalization index variables are now non-significant, with the exception of the stock market liberalization component, which significantly decreases volatility[41]. The EU dummies are equally non-significant (bar the EU_{ts} dummy on the

[41] Kose et al., 2003, and Prasad et al., 2003, obtains somewhat comparable results, concerning their MFI (more financially integrated) sample of emerging markets.

total consumption regressions) and these results remain the same using a post-1996 sample.

All the regressions in this section were also estimated with squared terms for the liberalization indexes, to try to capture eventual non-linear effects of a liberalization process (or "threshold" effects, like the ones found in Kose et al., 2003). The changes on the coefficients are mostly marginal.

Another robustness test was to estimate all the regressions on this section using different time samples, to test for the stability of the coefficients across time (roughly, using the first and later halves of the sample) and here, as one should expect, given the initial instability of the time series, one does observes some significant differences. Concentrating on the index variables, for the stock market index, when using the aggregate index the sign and significance are roughly the same for the later part of the sample, but the coefficient is three times larger in the earlier sample, and when using the disaggregate indexes, all the components are non-significant in later sample, and again have much larger point estimates in the earlier sample, but with same signs and significance as in the initial estimations presented in this section (one may see this as an indication that liberalization was more important in the initial set-up phase of those stock markets); for the industrial production index, when using the aggregate index, the variable is non-significant for the later part of the sample, but the coefficient is again much larger in the earlier sample (which may be seen as an indication that liberalization was most important early in the process, when industrial re-structuring took place), and when using the disaggregate index, the sign, scale and significance of the coefficients remain roughly the same in the later sample, but in the earlier sample only the FSL component is significant, with a larger point estimate; for the changes in the nominal exchange rate, neither the aggregate index nor the disaggregate indexes are significant in the earlier sample, while in the later sample *both* the aggregate and disaggregate indexes are now significant, with the same signs but larger point estimates (perhaps an indication that the liberalization process only affected exchange rates after a certain degree of macro stabilization was achieved); for private and total consumption, one does not observe major changes between the two time samples. All the results above remain roughly unchanged using both those two different time samples *and* squared

terms for the liberalization indexes, another indication that the time variance observed in the series dominates the results.

8 Conclusion

The main aim of this paper was to extend the index developed by Kaminsky and Schmukler, 2003, for a specific sample of countries, namely, the previously centrally planned economies from Central and Eastern Europe that are candidate countries for membership in the European Union, and to perform a similar analysis on them.

My results lend only weak support to the basic assumption of this study: a re-estimation of K&S's core regressions, using cycles defined by a Bry-Boschan algorithm that finds cyclical turning points, finds some signs that financial liberalization does generate benefits both in the short and in the long run, measured via the statistically significant extension of the amplitude of upward cycles and its –statistically non-significant- reduction for downward cycles of stock market indexes. Some of those weaknesses are likely related to the shortness and specific features of the sample of countries here used. Importantly, these estimated results diverge from K&S, as in their work "emerging markets" experience a relative *short run* increase in the amplitude of downward cycles.

Another noteworthy feature is that only minor liberalization reversals, led by the financial sector component, were observed in the aggregate index. Also, those reversals do not seem to be driven by "contagion" from shocks in other emerging markets (like the Asian or Russian crisis), but reflect country-specific shocks. When considering the individual components of the index separately, again signs of minor reversals in financial sector liberalization are observed, related to temporary reactions to the several banking crisis observed in the region.

Concerning the importance of institutions and of the EU Accession, this paper's initial assumption was that the mostly positive results above would come about due to the anchoring of expectation provided by the perspective of entry into the EU already by mid-2004 (or 2007, in the case of Bulgaria and Romania) for the countries here analyzed, and by the imposition of a more robust macro and institutional framework by the requirements of the Accession process itself. Strong signs of this are *not* found in

the K&S regressions, perhaps because the liberalization index itself captures the effects of the EU Accession process.

Finally, using a different framework than K&S's to assess the affects of liberalization on financial, real and nominal volatility, most of the econometric results seem to support the previous ones, but they seem to indicate that the *capital account liberalization* is the element that most consistently and significantly reduces volatility. One also observes significant time-varying effects on the coefficients, as one should expect, given the nature of the series used, but no non-linear effects of liberalization. On this final section, the majority the econometric results seem to support *some* specific role for the EU Enlargement process in reducing volatility.

Annex

The Bry and Boschan Algorithm.

Bry and Boschan (1971, ibid) developed a nonparametric algorithm to find peaks and troughs (i.e., "turning points") in individual time series. Their procedure consists of six consecutive steps. First, outliers are identified and replaced by corrected values. Second, troughs (peaks) are determined, from a 12-month moving average of the original series, for observations whose values are lower (higher) than those of the 5 preceding and the 5 following months. In case two or more consecutive troughs (peaks) are found, only the lowest (highest) is retained. Third, after computing a weighted moving average (a so-called "Spencer curve"), the highest and lowest points on this curve, within the +/-5 months-neighborhood of the previously determined peaks and troughs, are selected. Fourth, the same procedure is repeated using a short-term moving average, with a number of lags included depending on a MCD ("months of cyclical dominance": following Bry and Boschan, 1971, ibid, the MCD is the "number of months required for the systematic trend-cycle forces to assert themselves against the irregular time series component", p. 25) measure. Finally, in the neighborhood of these intermediate turning points, troughs and peaks are determined (obviously, in the time series modified as described above, not in the original ones).

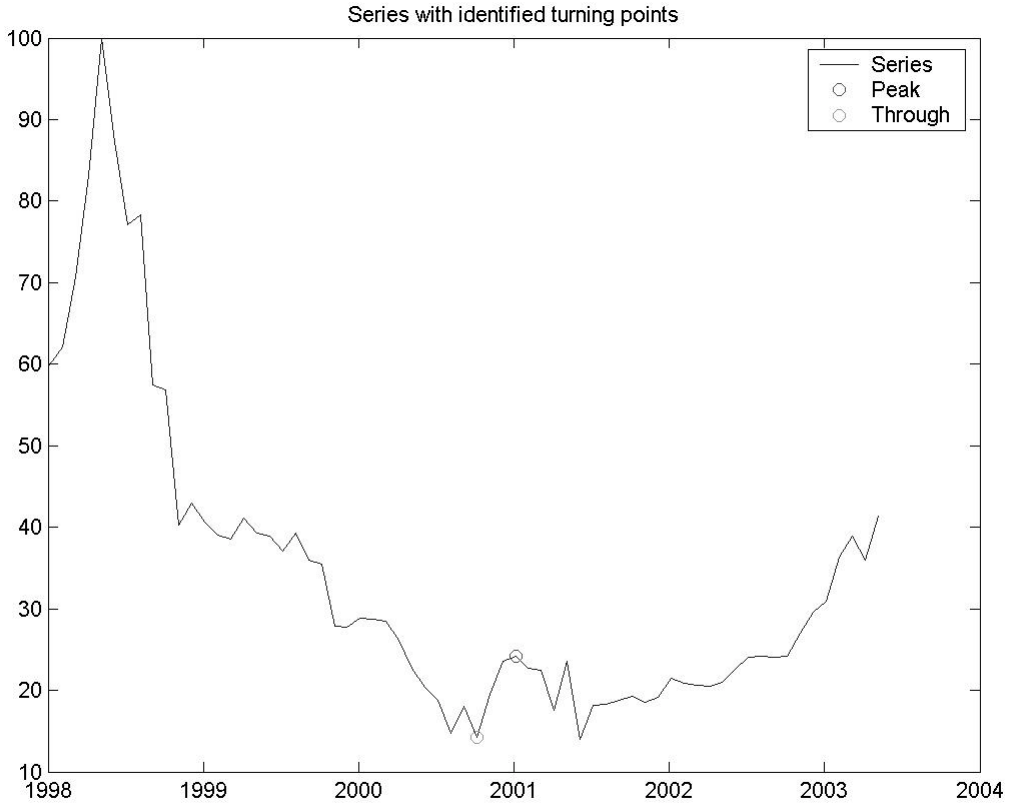
A MATLAB program originally created by Mönch and Uhlig (2004) that finds such business cycle turning points according to the BB (Bry-Boschan) algorithm was

used in this paper. This program leaves out two features of the original procedure, namely the adjustment for outliers in the original time series and a priori choice of the MCD measure, set to 3. The results for the countries in my sample (all but Romania, for who the procedure did not identified any cycles, using a minimum cycle-phase length of 5 months) are show in the figures below: the red dot represents the peak of the upward cycle (average duration: 19.3 months), the green one the through of the downward one (average duration: 21.1 months). One must note that the BB procedure is statistically demanding for such short series, and the fact that it effectively eliminates the early and final sections of the sample from the cyclical turning points' calculation makes the usable parts of the series even shorter.

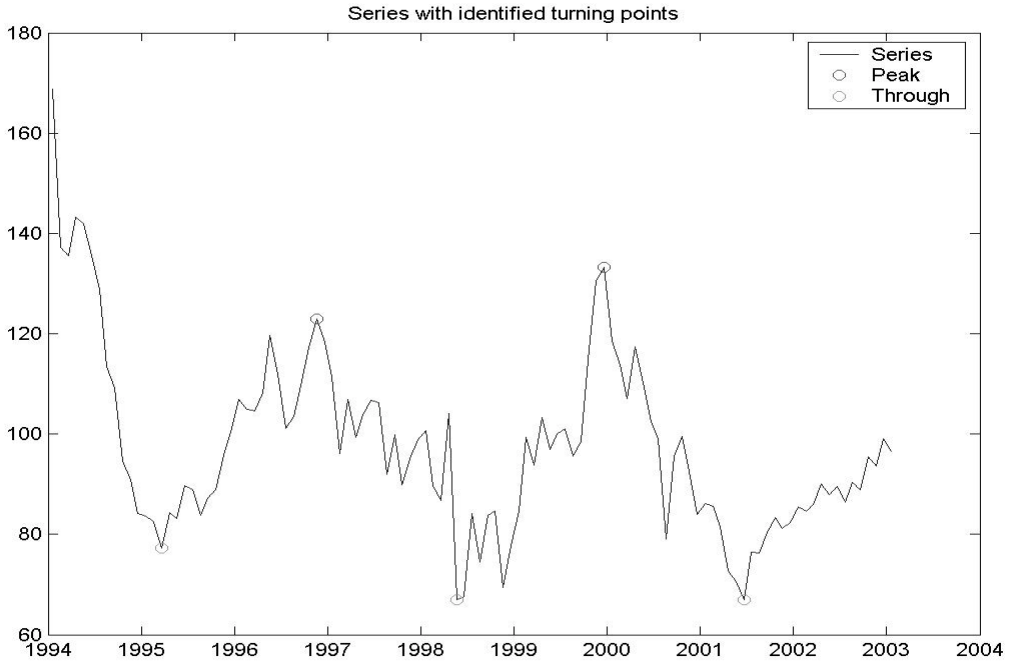
As a side remark, the usage of this BB procedure on IPI series of the countries above, to proxy for GDP, as Mönch and Uhlig (2004, ibid) do for the euro area, shows that only the Czech Republic, Hungary and Slovenia –exactly the economies found by more traditional correlation studies (see, for instance. Vinhas de Souza et al., 1999) to have greater GDP synchronization with the EU/euro area - have cycles within similar timeframe –i.e., peak in February 1992, through in January 1993- as the one complete cycle found for the euro area by Mönch and Uhlig (2004, ibid) during the 1990s, early 2000s.

Cyclical Turning Points with the BB Algorithm.

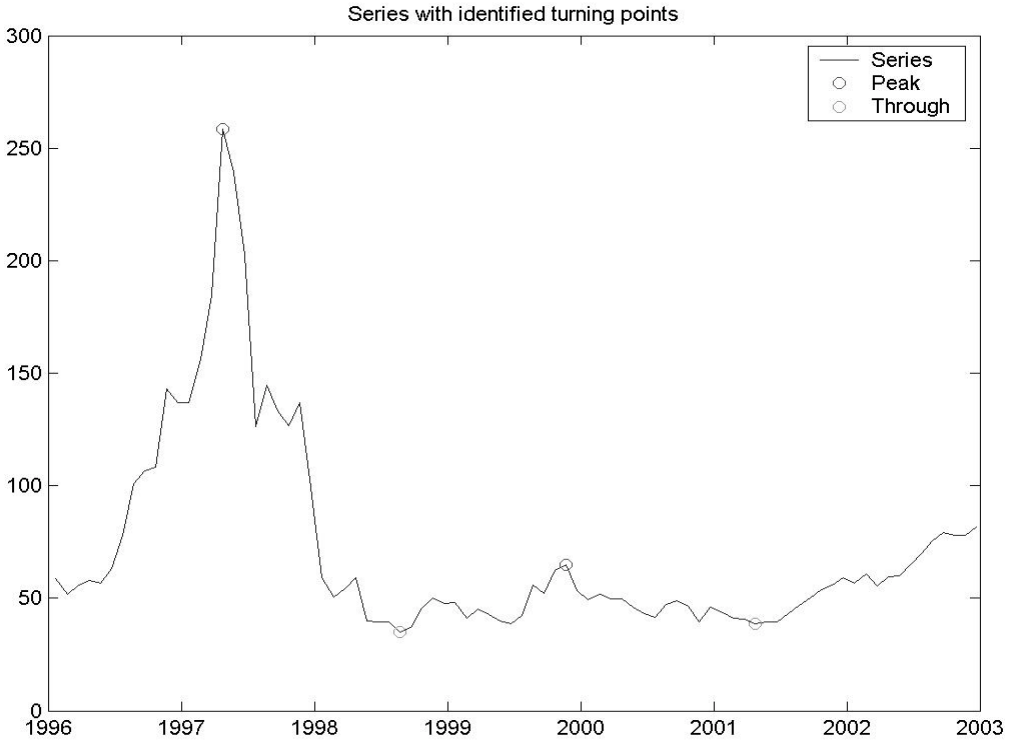
Bulgaria



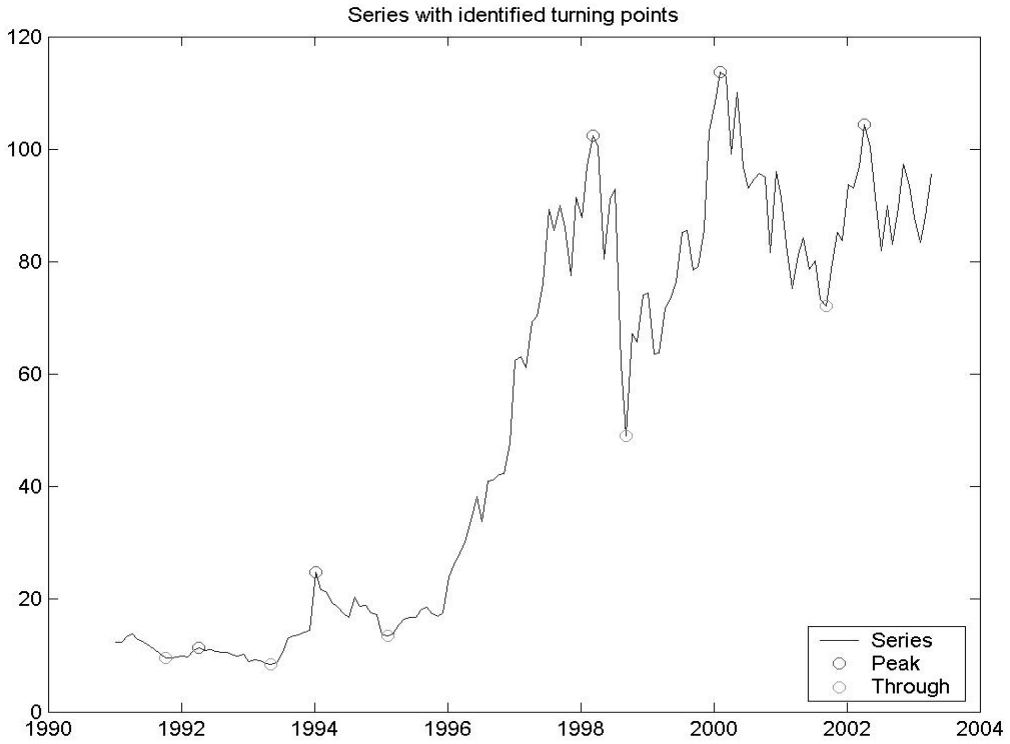
Czech Republic



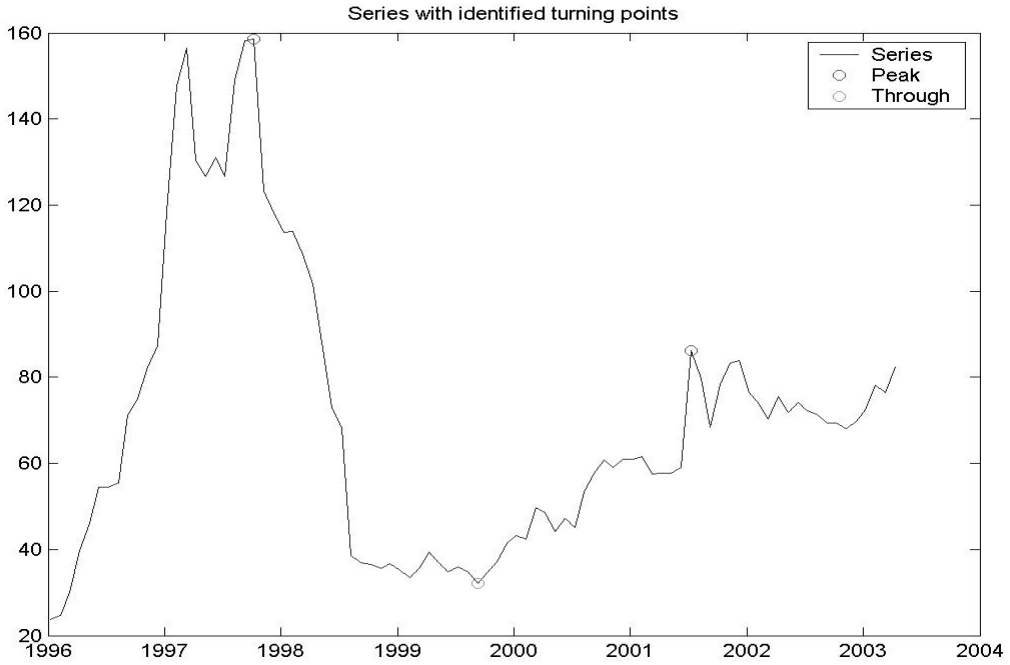
Estonia



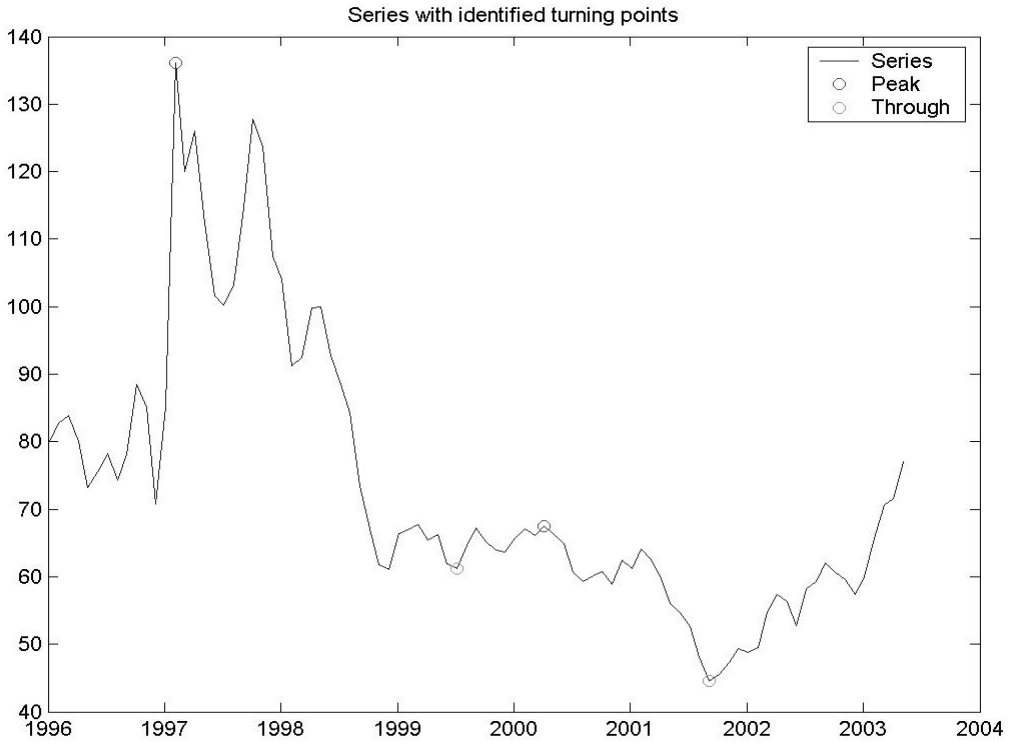
Hungary



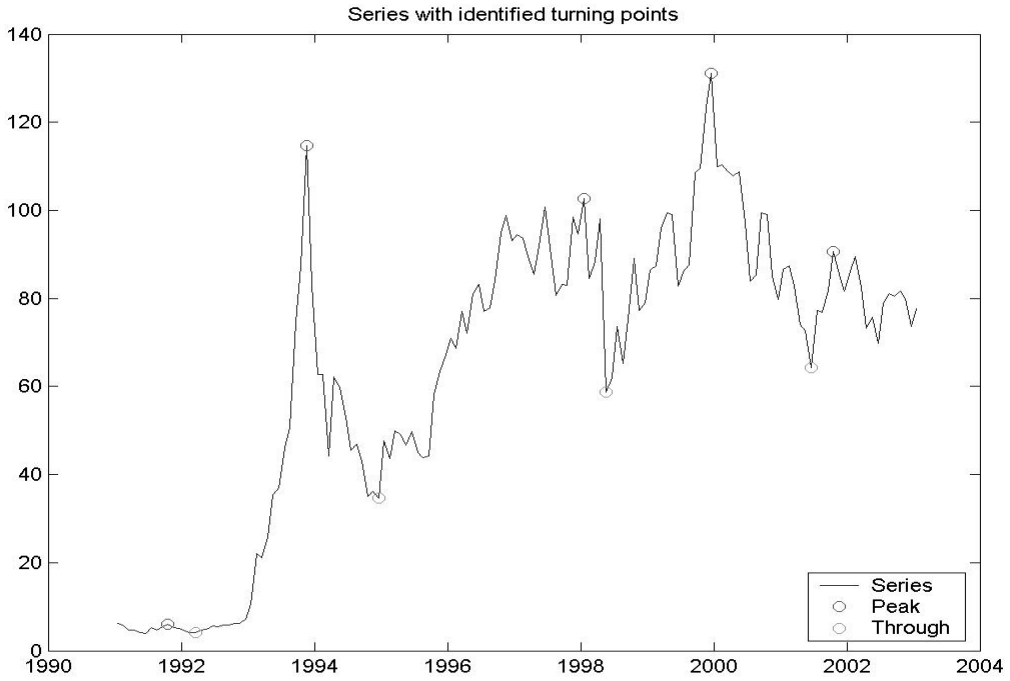
Latvia



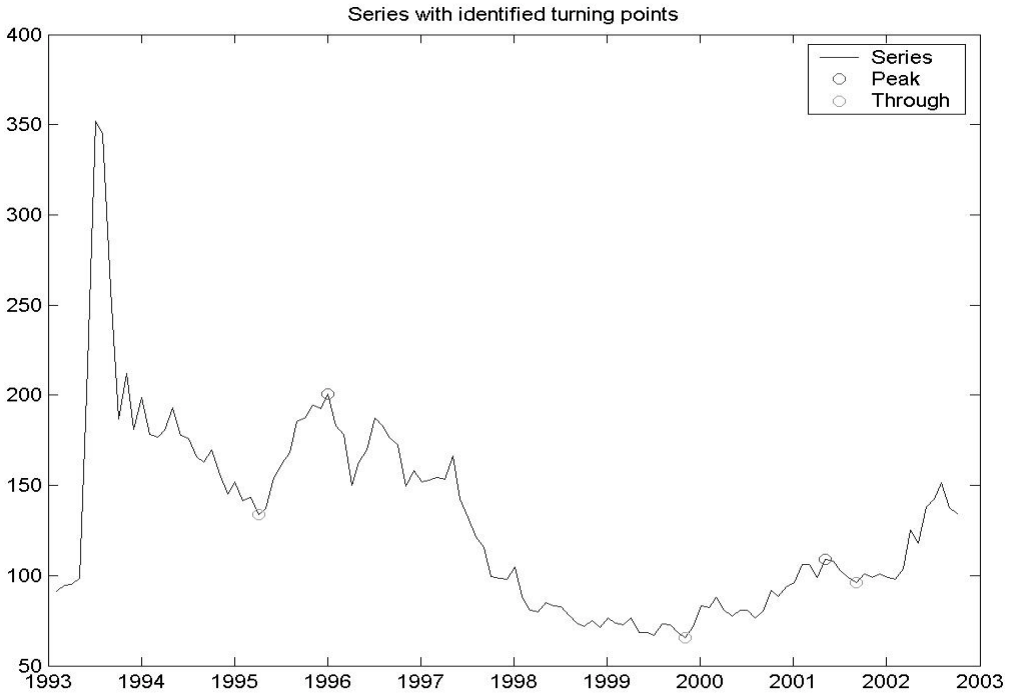
Lithuania



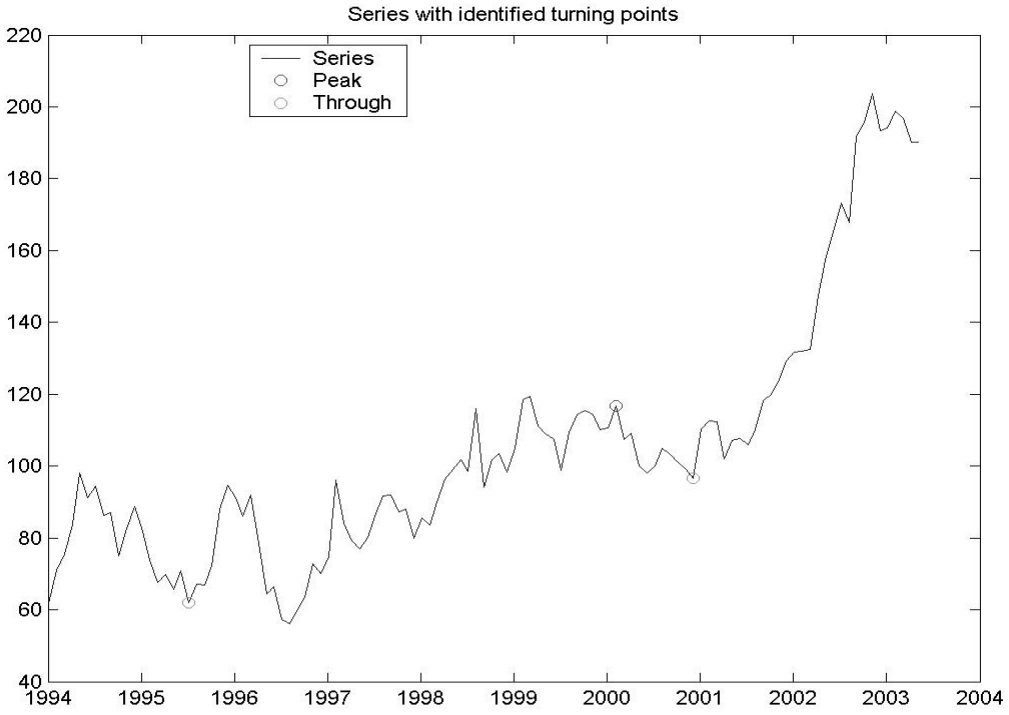
Poland



Slovakia



Slovenia



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