Towards economic and monetary union:
changing trends in payment systems for new European members

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In May 2004, ten new states became members of the European Union (E.U.). E.U. enlargement rests on the proven success of European unification. Furthermore, the European Monetary Union (EMU) and the introduction of the single currency are probably the best examples of integration [Stirbu (2004)]. Becoming an E.U. member implies the implementation of the 'acquis communitaire'. As a result, financial markets of new members are expected to be transformed: integration implies structural changes, such as cooperation among market regulators, supervisors, and technical and operational issues, as well as intensifying competition. Because financial systems are evolving rapidly into new models as a result of economic globalization and continuous development of information technology, the E.U.-15 becomes a moving target.

Changes in banking markets due to EMU adoption vary considerably between different areas of banking. The most notable changes have taken place in wholesale banking, with the creation of a large and steadily growing inter-bank market in the Eurozone. Furthermore, national central banks are involved in conducting the single monetary policy of the Euro Area and are largely responsible for collecting national statistical data for issuing and handling euro banknotes in their respective countries. As part of the E.U., and probably adopting the euro in the near future[1], the new member states (NMS) must also participate and work towards the adaptation of their payment systems to the single euro payment area (SEPA) [ECB (2003)]. With respect to payment systems, the situation of NMSs and how their adaptation to the E.U. is developing should be analyzed in terms of the uses and customs of the E.U.-15. This is especially interesting since the way in which consumers make their payments has been clearly evolving in recent years. Cash is no longer the primary method of making payments. It is facing heavy competition from other forms of payments, such as credit cards, direct debits, or other electronic means. However, since cash is a component of the money supply, knowing how it is used is important because of its implications for monetary policy.

As far as the monetary policy is concerned two issues are of interest. Firstly, consumer habits in the accession countries with respect to the financial system are quite different from those of the E.U.-15. These differences make the analysis and control of liquidity in the enlarged E.U. even more difficult for financial authorities [Prades Sierra (2003)]. Secondly, it is important to get a better understanding of the implications of new payment instruments, such as electronic money, on the monetary policy transmission mechanism and on the monopoly role of central banks in currency issuance [ECB (2002b), BIS (2002)]. For example, Markose and Loke (2003) argue that the interest rate sensitivity of cash card substitutes can be magnified if the degree of card network coverage increases. In low interest rate regimes this could lead to a situation in which interest rate rises (cuts) targeted at curbing (expanding) bank lending may prove to be difficult.

Consequently, within the process of reforms and adaptation that are associated with entry into the E.U., the field of payment systems is another important dimension. It would be useful then to evaluate both the differences between the accession countries and the E.U.-15 and the efforts the former should undertake in order to try and adapt their structures and reduce this difference. The objective of this paper is precisely to study the evolution of payment systems within the accession countries between 1996 and 2003 and compare them with those of the E.U. and the Eurozone countries.

Basic characteristics of the financial systems in the accession countries

In May 2004, ten new states (Czech Republic, Estonia, Cyprus, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia) became members of the E.U. For eight of these countries, membership is the culmination of a decade-long transition from central planning to market economies. The fall of Communism in Europe created an opportunity to end the historical East-West division in Europe associated with the Cold War. This evolution was accelerated as part of the adaptation process of joining the E.U. E.U membership has wider

1 Slovenia adopted the euro on 1st January 2007.

implications. It means embracing the Union's political, economic, and social values, such as democracy, the rule of law, competitive and open markets, and social cohesion. Behind this general trend, substantial differences in the transition processes themselves can be identified. Hungary and Slovenia were following a more gradualist strategy whereas Czech Republic and Estonia, and Poland in the beginning, were trying to follow a Big Bang strategy of fast and simultaneous implementation of reforms. Some countries implemented a mass privatization program, most notably the Czech Republic, while most of the others used a combination of methods to gradually divest the state assets. Some countries, like Poland, implemented a stabilization program early in the transition while others did not face large disequilibria in the beginning of the transition or dealt with milder macro stabilization problems later on.

NMS countries face two principal challenges. The first is to manage the continued and probably rapid process of further real economic convergence, which will accompanied by high real GDP and productivity growth rates and large capital inflows. The second is to achieve the degree of nominal convergence required to enter into (the third stage of) EMU. These two challenges are not unrelated. Rapid growth and large capital inflows can make it harder to achieve nominal convergence. Both challenges relate mainly to fiscal policy: managing capital inflows, because fiscal policy can absorb part of their demand effects, and nominal convergence, because the sustainability of public finances is part of the requirement for entering EMU.

After three years of membership, Slovenia is the first country to have adopted the euro in January 2007. After more than two years of participating in the ERM II[2] within the allowed limits of fluctuation and without devaluation, the Slovenian tolar has been accepted to become part of the euro. With this inclusion, the Bank of Slovenia becomes part of the Eurosystem and transfers the responsibility for conducting monetary policy to the Eurosystem. Today, the rest of the NMS countries are members without 'derogations' from adopting the euro. Like Sweden, and unlike Denmark and the U.K., they cannot formally opt out of the euro indefinitely, i.e., they are expected to become full members of the EMU sooner or later. Several of them have already announced target dates for this to happen[3].

The NMSs' financial systems present great heterogeneity. Nevertheless, a common element to all of them is the creation of a financial system in the early 1990s, since a majority of them previously had communist regimes and a public banking system, the exceptions being Malta and Cyprus. The existence of banking crises during the transition years has been a constant in most of the countries [Tang et al. (2000)], as a result of which these systems are in an initial stage of evolution and growth. Another interesting characteristic is that they are dominated by the banking sector. Foreign ownership of commercial banks is pervasive in these countries, much more so than in the case of most E.U.-15 countries [Stirbu (2004)]. It is even true that, after extensive privatization, the share of privately-owned banks is greater than in some countries participating in the Euro Area.

Data and descriptive analysis

This paper uses the data published on payment systems by the ECB. We use data on cash, cards (number and use), automatic teller machines (ATM), and electronic fund transfers at point of sale (EFT-POS)[4] networks in the 2004 E.U. candidate countries. Data is available both for the accession countries: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia, and for those proposed for a later acceptance: Bulgaria and Romania. We include data about consumption and population collected by the Eurostat office. Finally, we also introduce data on the E.U.-15 and Euro Area to allow for comparisons [Callado and Utrero (2004)]. The period of analysis is 1996-2003.

Cash use

Cash use relevance is usually analyzed by looking at two different variables: cash in circulation as a percentage of Gross

2 ERM II includes the currencies of the E.U. member states that have not adopted the euro and participate in the system, however, the exchange rate can fluctuate within specified bands. The standard fluctuation band is ±15% around the central rate, but narrower bands may also be agreed upon. In addition to the Slovenian tolar, the currencies participating in ERM II in 2004 were the Danish crown, Estonian crown, Lithuanian litas, Cyprian pound, Latvian lats, Maltese lira, and Slovak crown.

3 Hungary, Latvia, Malta, and the Slovak Republic seem to be aiming for an EMU entry by around 2010. The Czech Republic has set a conditional target date of 2010 and Poland has no target date at all.

4 ATM is defined as an electromechanical device which permits authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services, such as making balance enquiries, transferring funds, or making deposits. EFT-POS refers to the use of payment cards at a retail location (point of sale) when the payment information is captured by electronic terminals.

Domestic Product (GDP) and as a percentage of M1. These variables are generally accepted in the Bank of International Settlements (BIS) analysis as representative of the use of cash as a mean of payment. Figure 1 presents both measures for all countries and the average values for E.U. and the Eurozone. For brevity, it includes the values of both variables in the first and last year of the period of study.

A reduction in the use of cash, measured as percentage of M1, can be observed for most of the countries, with the only exceptions being the Czech Republic, Romania, and Slovakia. Czech Republic and Romania experience a slight increase (9.6% and 6.6% respectively), while Slovakia's is much more dramatic (32.8%). The results change when we look at the usage of cash as percentage of GDP. In this case, the reduction in the use of cash is not so clear. In almost half of the countries it actually increases in importance and in those where the usage falls, it does so much less dramatically. Consequently, it is not possible to conclude that there has been a general movement away from cash towards alternative means of payment for the members of the accession countries.

When we compare the countries that finally joined the E.U. with those that failed we find some clear differences. It seems that the reduction in cash usage is much more dramatic for members of the latter group no matter which parameter is used. In absolute terms, NMS countries have a lower level of cash usage as a percentage of M1, but a higher usage in relation to GDP. When compared to the E.U. and the Eurozone countries, NMS countries' use of cash is higher irrespective of the parameter used. Within the E.U.-15, cash usage is very small, and it is expected to become even smaller once the initiatives being pursued by the banking sector are fully realized [European Payment Council (EPC) (2003)]. Given this evolution, therefore, NMS countries would have to reduce the usage of cash as a mean of payment by about 60%.

Retail payments

Another way of looking at payment systems is through an analysis of the competition between payment instruments at the retail level. In fact, the ability to substitute cash-based payments depends importantly on the availability of alternative non-cash methods. On the one hand, ATM networks allow clients to have access to cash, deposited in their current

	Cash (% GDP)		Cash (% M1)	
	1996	2003	1996	2003
Bulgaria	18	11.1	129.7	48.2
Cyprus	6.4	7.1	40.6	34.0
Czech Republic	7.6	9.2	25	27.4
Estonia	8.1	6.1	34.5	19.8
Hungary	7.2	7.3	40.2	33.4
Latvia	9.3	10.2	62.1	48.6
Lithuania	6	8.3	52.6	44.0
Malta	30.2	24.2	79.7	30.9
Poland	6.1	6.2	38.6	31.3
Romania	4.9	3.2	48.2	51.4
Slovakia	7.2	8.0	25	33.2
Slovenia	2.6	2.7	28.4	20.5
Candidate (12)	9.47	8.6	50.38	35.2
Non-accession (2)	11.45	7.2	88.95	49.8
NMS (10)	9.07	8.9	42.67	32.3
E.U.-15	5.3	5.0	13.8	11.9
euro	5.8	5.5	18.1	14.6

Figure 1 – Cash

	Number of Transactions – Cash		Average value ATM	
	1996	2003	1996	2003
Bulgaria	0.03	4.9	17	43
Cyprus	2	9	86	106
Czech Republic	4	13	37	101
Estonia	8	35	20	51
Hungary	2	10	54	101
Latvia	0.02	11	79	75
Lithuania	0.03	10	67	70
Malta	10	21	67	82
Poland	0.2	10	35	61
Romania		4.5	0	41
Slovakia	5	12	26	57
Slovenia	8	29	45	56
Candidate (12)	3.6	14.1	44.4	70.4
Non-accession (2)	0.015	4.7	8.5	42
NMS (10)	3.9	16.0	51.6	76.0
E.U.-15	16	28	104	122
euro	14	26	112	171

Figure 2

accounts, in places closer to the point of sale. On the other hand, instruments, such as debit cards, provide consumers with instruments of payment different from cash by means of the availability of terminals just at the point of sale (POS). The ECB reports a general increase in payment facilities during the period of study[5]. Figures 2 to 6 help us to understand the evolution of usage of these instruments in the last years.

Figures 2 and 3 present the number and average value of ATM and POS operations. The number of transactions on both the ATMs and the POS networks increase. This result is coherent with the expansion of the infrastructures observed in the data. The average value of cash withdrawals increases over time in the candidate countries, while the E.U.-15 experience a more moderate rise. Therefore, the difference between NMS and the E.U.-15 diminishes. A possible explanation could be that when consumers start to trust the financial system and the new instruments, they withdraw more money than in the case of more experienced countries. It should be noted that there was a dramatic increase in the amount of ATM transactions in the E.U.-15 subsequent to the introduction of the new currency in 2002.

The value of POS operations, however, does not present a general trend. Hungary and Malta experience an increase, Slovenia is nearly constant, and the rest experience a fall. The E.U.-15 and the Eurozone countries have very stable numbers with a slight decrease that contrast with the clear reduction in the non accepted countries and the increase in the newcomers.

Figure 4 compares the per capita ratio of the value of card (credit and debit) and cash transactions on ATMs. Only Cyprus and Hungary have a ratio clearly over 1, which represents a greater usage of cards than cash in terms of value. The rest of the countries are far from 1, with values in most cases being below 0.5 and without a clear pattern of behavior. While some countries experience a slight growth during the period, others maintain a relatively constant ratio or even experience some reductions, as was the case with Poland, Romania, and Lithuania.

	Number of transactions – cards		Average value of cards, credit, and debit	
	1996	2003	1996	2003
Bulgaria	0	0.35	4	222
Cyprus	4	21	168	158
Czech Republic	0.1	5	77	46
Estonia	0.2	35	16	18
Hungary	3	18	56	157
Latvia	0	10	0	25
Lithuania	0.1	7.2	101	84
Malta	3	10	61	136
Poland	0.05	3.6	127	65
Romania	0.001	0.22	0	76
Slovakia	0.03	5.6	33	64.2
Slovenia	12	49	25	58
Candidate (12)	1.9	13.7	55.7	92.44
Non-accession (2)	0.0005	0.3	2	149
NMS (10)	2.2	16.4	66.4	81.1
E.U.-15	17.7	52.2	150.6	143.2
euro	18.6	46.6	150.8	140.1

Figure 3

	1996	2003
Bulgaria		0.137
Cyprus	1.814	1.7317
Czech Republic	0.052	0.1752
Estonia	0.02	0.3502
Hungary	1.5556	1.7283
Latvia	0	0.303
Lithuania		0.2257
Malta	0.2731	0.3508
Poland	0.55	0.1785
Romania		0.0479
Slovakia	0.0076	0.189
Slovenia		0.8818
Candidate (12)	0.534	0.5249
Non-accession (2)	0	0.0924
NMS (10)	0.534	0.6114
E.U.-15	0.7026	1.0094
euro	0.8551	0.6969

Figure 4 – Per capita ratio of the value of card (credit and debit) and cash transactions in ATMs

Consequently, the use of cash in retail transactions clearly prevails over the use of cards. The comparison between the countries that finally acceded to the E.U. and those that did not shows clear differences. The former are around 0.5, whereas the latter have very low ratios, nearly testimonial. In addition, NMS countries are closer to the average of the E.U.-

5 The average increase of ATMs for the years of study lies around 40%. At the same time the relative number of POS with respect to ATMs has doubled for candidate countries.

	Per capita value of card operations by POS unit		Per capita value of card operations by ATM unit (thousands)	
	1996	2003	1996	2003
Bulgaria	0	47992	63750	1350641
Cyprus	25303	33171	751092	1848837
Czech Republic	71963	76209	1309735	5252000
Estonia	3917	92879	1111111	3771488
Hungary	314607	705980	1009346	3435374
Latvia	0	56612	158000	2211796
Lithuania	165574	46110	251250	2463415
Malta	27627	21088	2827004	4604278
Poland	51343	34505	500000	3080808
Romania		12584		1474677
Slovakia	13750	45334	890411	2442857
Slovenia	0	33140	1764706	2615137
Candidate (12)	61280	100467	966946	2879276
Non-accession (2)	0	30288	31875	1412659
NMS (10)	67408	114503	1057265	3172599
E.U.-15	169977	252081	3697778	4666667
Euro	205367	230139	3266667	6016238

Figure 5

15 and the Eurozone, although with half the ratio. This variable could have been taken as a predictive indicator for accession.

Figure 5 presents the per capita value of the operations with cards and cash by unit of POS and ATM. This measure can be considered as the intensity of use of each instrument. In the case of cards, there is no uniformity across countries. While some experienced slow growth, others have either remained constant or have fallen in intensity of usage, as is the case with Lithuania, Romania, and to a lesser extent Malta. It is interesting to highlight the atypical values for Hungary vis-à-vis the other countries, reflecting the commercial and promotional effort of financial organizations to increase card usage [ECB (2002a)]. Comparison between NMS and the non-accession countries demonstrates clear differences, with the former group of countries experiencing growth in the usage of cards as a means of payment, while the latter countries experienced a reduction. When compared with the evolution of the E.U.-15 and the Eurozone countries, we can see that the NMS countries followed a similar pattern and were almost matching them towards the end of the period. The two non-accession countries had a different evolution pattern and were much further away from the E.U.-15 and the Eurozone countries. It is interesting to note that in the E.U.-15 countries cards are the most utilized methods of payments, accounting for about one-third of domestic and up to 83% of transnational operations. The E.U. banking industry is currently promoting greater use of alternative methods of payments, including electronic, under the umbrella of SEPA [EPC (2003)]. Consequently, the gap between the NMS and the E.U.-15 countries remains large, and will require investments in infrastructure, information, and education of consumers to reduce it.

The intensity of cash use through ATMs shows a clear growth trend in all countries. This similar evolution is also reflected in the NMS and those countries whose accession was postponed, although the average value of the transactions is clearly smaller in the latter. Nevertheless, the maintained and sharp increase in the NMS countries, as well as Romania and Bulgaria, contrasts sharply with the more irregular tendency in the E.U.-15. The E.U.-15 countries experience some reductions but present a growth trend from 2001, which coincides with the introduction of euro and that can be considered as atypical. Therefore, while in the E.U.-15 countries cash use remains relatively constant, the Eastern European countries continue to experience strong growth.

Comparing the columns in Figures 5, we can conclude that the intensity of cash use is greater than that of cards and that the growth of cash usage intensity in the last years contrasts with the reduction in the usage intensity of cards in some countries. Consequently, financial authorities and companies should focus their efforts on two areas. Firstly, they should try to increase the number of POSs versus ATMs. Secondly, by increasing the security and reliability of non-cash methods, they should try and persuade consumers to make greater of use of these methods of payments. In this sense the stimulation of the financial system's confidence will be fundamental.

Cash and electronic payments

Figure 6 presents the evolution of the relationship between cash use (as percentage of M1) and the use of electronic payment instruments between 1996 and 2003. There are four quadrants determined by the average value of both indicators that classify the countries with respect to these two variables. At the beginning of the period most of the countries lie in region I, that is to say, a high use of cash and a very low usage of electronic means.

From 1996 to 2003, countries move, in general, towards quadrant IV, although the majority remain in the same quadrant as at the beginning of the period. The use of electronic instruments clearly increases. Cash use, nevertheless, stays almost constant in all cases. Only Malta and Bulgaria clearly improve their positions in the horizontal axis, while Slovakia and Romania reduce it. NMS countries approach quadrant IV,

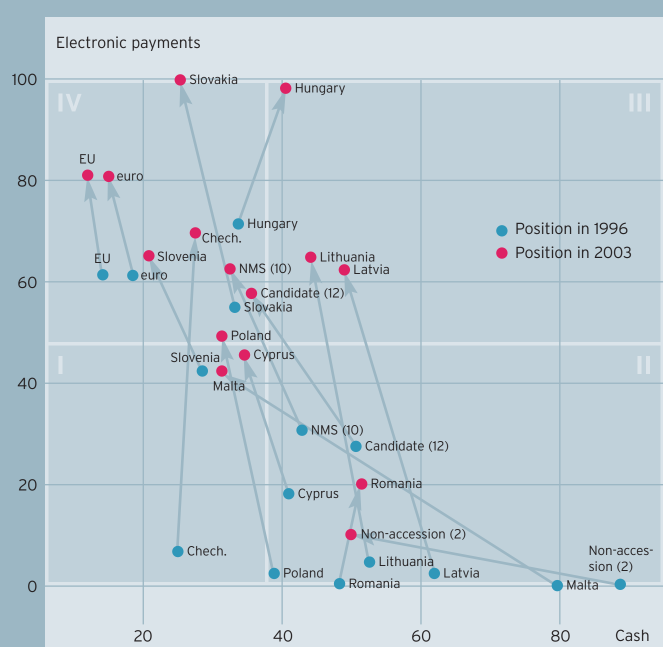

Figure 6 – Non-cash electronic transactions as a percentage of total volume non-cash transactions and cash as a percentage of narrow money: 1996-2003

but they finish in the border between the second and the third quadrant. That is, improving in electronic instruments but maintaining a relevant weight of cash. The change is greater for the two countries that did not enter[6], although their final situation is away from that of NMS. Both the E.U. and the Eurozone countries evolve towards less usage of cash, although cash usage remains at a high level, around 50%, and of greater importance than electronic means of payment. They are located clearly in quadrant four in 1996 and evolve in the direction already mentioned at a great distance from NMS.

Conclusion

This paper makes an evaluation of the evolution of retail payment systems in the NMS countries and compares them with the E.U.-15 countries during the period between 1996 and 2003. This is carried out with available data from the ECB on different means of retail payments and payment infrastructure. The analysis illustrates that the usage of cash in accession countries has fallen, although it continues to have an important role in the functioning of these economies. In retail payments, cash usage increases vis-à-vis cards, although there has been improvements in the infrastructure of card providers. Both findings are in contrast to what we observed in the E.U.-15 and the Eurozone countries, especially when one considers the efforts being made to create a single euro payments area (SEPA). These differences require a remarkable effort of approximation and integration of the new members. With regards to instruments different from cash, the accession countries seem to be approaching the E.U.-15. They experience an increase in the use of electronic methods of payment, although maintaining some differences with respect to transfers and direct debits.

Nevertheless, the data shows that the average card use as a payment instrument has not increased importantly in the NMS countries during this period. Consequently, the continuation of the improvements in payment infrastructures will be very important in the development of cards as payment instruments. Economic development, that is expected to

6 The reduction in cash use is due mainly to Bulgaria, which starts with nearly a 100% of cash use at the beginning of the period.

increase once they are within the union, will also help to increase usage of cards. These findings help us identify the efforts that the new members of the E.U. need to make to catch up with their neighbors. This payments' convergence will be part of the integration in the new economic and, in the near future, monetary area.

Finally, the analysis demonstrates that the payment characteristics of Slovenia are very close to those of the Euro Area during the period of study and it can be considered the closest country to the ones that form the monetary union. It is not surprising, then, that Slovenia was the first county to join the Eurozone in January 2007.

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