

Rita Odorán and Balázs Sisak: Cash demand of the Hungarian economy – is the shadow economy still running smoothly?

In international comparison the cash demand of the Hungarian economy is high and has increased over the last two years in a manner not related to the fundamentals of the economy. We have identified two factors which may have contributed to this process. The introduction of the tax on interest in 2006 points towards increasing cash demand given the one-off change of the opportunity cost of cash, and the increased tax burdens introduced in order to reduce the budget deficit as well as other austerity measures of the tax authority also increase cash demand through the presumed expansion of the shadow economy's cash requirement. In addition, the high cash demand characterising the Hungarian economy may also be explained by the fact that in international comparison Hungary lags behind in the use of cashless payment instruments. High cash usage is unfavourable for the whole economy from several aspects. Our article emphasizes that while in developed countries one may find several examples of measures aimed at restricting the cash usage, in Hungary we have seen only failed attempts so far.

INTRODUCTION

In 2007 the volume of the currency in circulation in Hungary exceeded not only that of the peripheral countries of the euro area prior to the introduction of the euro, but also those of Central and East European countries with similar level of economic development to Hungary. While in the former group the economy's cash demand was stable – or even slightly decreased – in the period prior to the establishment of the euro area, during 2006-2007 the volume of the currency in circulation in Hungary increased to a larger extent than would have been explained by economic fundamentals (economic growth, inflationary process). The spread of cashless payment instruments – becoming increasingly popular with the modernisation of payment methods and involving moderate cash usage – also conflicts with the rising cash demand.

The use of cash facilitates the operation of the black economy, which affects long-term economic growth negatively. Furthermore, high cash demand – despite the increasing use of cashless payment methods – may burden the economy with additional costs. Measures aimed at restraining the use of cash and promoting alternative payment instruments have already appeared in economic policy discussions.

In this article, we first briefly describe the factors influencing cash demand, and then we examine the evolution of the

Hungarian economy's cash demand in international comparison. Afterwards, we try to identify the factors behind the use of cash by analysing the conventional factors of currency in circulation in Hungary. We touch upon the popularity of cashless payment methods in Hungary and finally we describe some measures introduced by other countries in order to restrict the use of cash.

WHICH FACTORS INFLUENCE CASH DEMAND?

The amount of (forint) currency in circulation is the total volume of coins and banknotes that economic agents wish to hold. Currency is introduced into circulation via commercial banks, which in turn obtain the required volume of currency to the debit of their account with the central bank. The majority of the currency in circulation in Hungary leaves the banking system, the larger part of it (around 90%) being held by households and the smaller part by companies.¹ The remainder of the cash holdings (around 7%) stays within the banking system, forming the balance on hand required for banks' daily operation. Similarly to retail deposits, banks are entitled to interest on their deposit accounts with the central bank, which in their case (also) represents a cost of holding cash. Therefore credit institutions hold only as much cash as strictly necessary to meet the cash demand of economic agents. Thus the currency issued entirely reflects the demand of economic agents.

¹ The figures of various sectors' cash balance can be found in the so-called financial accounts and the balance sheet of the banking system. The cash balance held by households is calculated using the residuum principle.

Cash may be held for different reasons. On the one hand, cash is required to settle purchases of goods and services (*transactions demand*), and on the other economic agents keep a part of their savings in the form of cash (*hoarding*). Several factors may influence the cash demand of an economy depending on the purpose of cash holding, of which the most important are:

- **Economic growth:** parallel to the economic growth and the increase of prices, individuals spend increasingly more on purchases of goods and services, a part of which is transacted in cash.
- **Opportunity cost of cash:** the cost of cash is the interest lost that we would have received if we kept the unspent part of our income in other interest-bearing instruments. The opportunity cost of cash changes in parallel with inflation and the interest rate environment. If an economy is characterised by a downward (upward) inflation trend, cash holding becomes cheaper (more expensive), which in turn may have an increasing (decreasing) effect on the cash demand (via hoarding).
- **Spread of cashless payment instruments:** with the modernisation of payment settlement methods, cashless payment methods – replacing the physical form of cash – (bankcards, credit cards) keep gaining ground, thereby the cash volume required for transactions may drop.
- **External demand:** foreign agents may generate significant demand – related to hoarding – for stable currencies, functioning as reserve currencies (e.g. US dollar, euro). In the case of Hungary, this factor can be ignored.
- **Cash demand of the shadow economy:** payments in the shadow economy presumably take place in cash. The anonymity of cash use and the fact that it can hardly be traced, or not at all, renders it attractive for settling transactions concluded in the shadow economy, and for hiding income. Therefore this most elusive factor may also affect the volume of currency in circulation to a large extent.

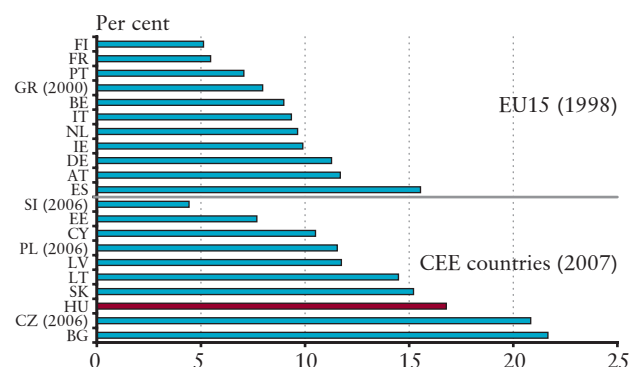
In the various analyses examining the relation between the economy's cash demand and its influencing factors – thus in this article as well – it would be reasonable to examine transaction-based cash demand and the cash volume held for hoarding separately, since they may be influenced by different factors. Moreover, certain factors may influence these cash holding motivations in opposite directions. An example is the increase of inflation, which affects transactions demand positively through the faster increase

of prices, but has a negative impact on the cash demand related to hoarding via the increase in the opportunity cost of holding cash. However, the information available to us does not allow separation of the cash volume originating from these two cash holding motives.

HIGH DOMESTIC CASH DEMAND IN INTERNATIONAL COMPARISON

The cash demand of the domestic economy is high in international comparison. One of the most important purposes of cash use is to settle payments in cash. Parallel to the growth of the economy, transactions related to the purchase of goods and services are also expanding, thus it is reasonable to compare the development of an economy's cash demand with a ratio measuring economic activity. According to data available at the end of 2007, the cash balance compared to consumption expenditure was over 16% in Hungary, which may be considered high compared to the values measured in Central and East European countries and to the peripheral countries of the euro area (Spain, Portugal, Greece, Ireland) prior to the introduction of the euro (Chart 1).

Chart 1
Currency in circulation* in proportion to households' consumption expenditure in the EU member states



Sources: MNB, Eurostat, central banks.

* End of period figures.

It is worth mentioning that the high cash demand of the Spanish and German economies – which is relatively high even among developed countries – may have been generated in part by the measures taken in the 1980s aimed at the taxation of capital incomes, which – through the decrease opportunity cost of cash – led to increasing cash demand. The expansion of the Spanish economy's cash demand may have been influenced by the introduction of a value added tax, leading to tax evasion. In the case of Germany, the political and economic transformation that took place in the Central

and East European countries at the end of the 1980s and the beginning of the 1990s may have increased cash demand further. Confidence in the German mark generated considerable external demand for the German currency from these countries, which – as a result of the stabilisation of their economies – already fell in the second half of the 1990s. The high cash demand in Austria may be explained by the fact that the use of cashless payment instruments is less widespread compared to other developed countries. However, looking at the euro area in its entirety, the volume of the currency in circulation has been continuously increasing since the introduction of the euro, which may be related to external demand for the single currency (Fischer-Köhler-Seitz, 2004).

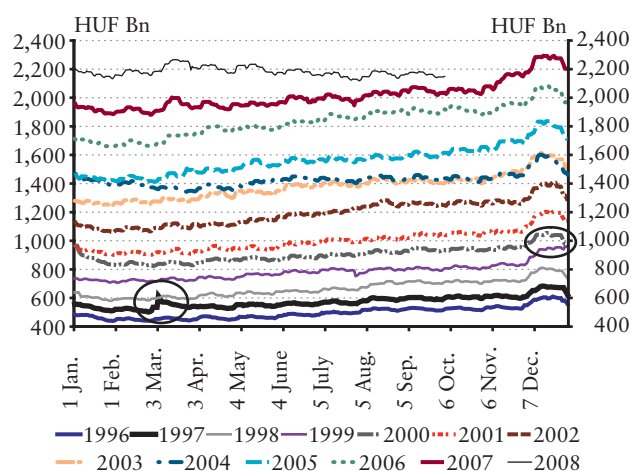
The source of the Hungarian economy's high cash demand should be sought in the evolution of the factors influencing it, which we will do by analysing the stylised factors concerning the volume of currency in circulation.

CASH DEMAND IN THE HUNGARIAN ECONOMY – STYLISTED FACTS

Currency in circulation is showing an increasing trend in nominal terms in accordance with economic growth and the increase of prices. However, during the last decade there were several “strange” periods in the evolution of the volume of cash. In 1997 – as a result of the negative rumours concerning Postabank – a large volume of bank deposits was withdrawn, which resulted in a sharp increase of the cash balance. Within a few days, the balance of the currency in circulation increased by approximately HUF 70 billion. Although the economy's cash demand generally falls following substantial year-end spending (December), the uncertainty related to the new millennium at the end of 1999 entailed further growth of the cash demand (Chart 2). At the beginning of 2004 the increasing trend of cash holdings observed previously was disrupted: following a drop at the beginning of the year and then stagnation, the amount of cash returned to the end-2003 level by the end of the year. The disruption in the development of the nominal volume of currency followed a significant increase of the basic interest rate, which took place during a relatively short period (the base rate increased altogether by 600 b.p. between June and December 2003). The simultaneous increase of the interest rate paid on bank deposits may have encouraged households – which hold the major part of the amount of currency in circulation – to reallocate their savings. During this period, the ratio of cash savings within their financial savings dropped, and in parallel the ratio of interest-bearing assets – bank deposits and government securities – increased.

Chart 2

Annual development of currency in circulation, daily figures



Source: MNB.

Similarly to 2004, the amount of cash issued stagnated in 2008 and the stagnation can be explained by the reorganisation of households' liquid assets. Besides intensive accumulation of foreign exchange deposits in the period around April-July, foreign currency savings² may have also increased significantly.

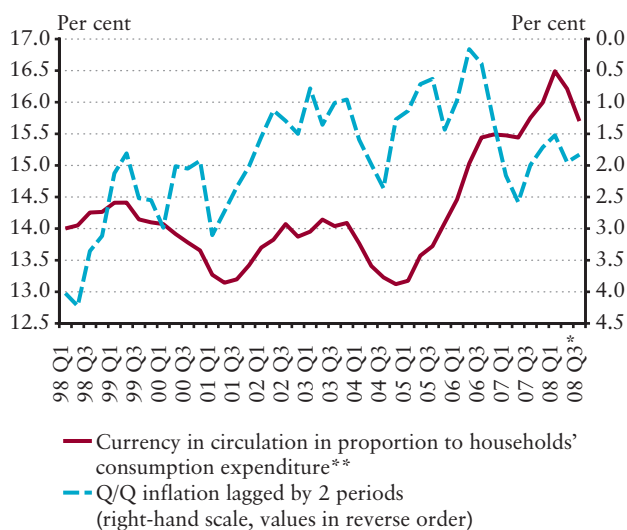
During the last two years the dynamics of the growth in cash demand exceeded the extent linked to the purchase of goods and services. While the economies of the euro area's peripheral countries experienced stable or slightly decreasing cash demand in the period preceding the introduction of euro, in the Hungarian economy the cash volume compared to households' consumption expenditure started to increase in 2006 from the former 13-14%, and by the end of 2007 it was above 16%.

The introduction of the tax on interest income generated a one-off drop in *the opportunity cost of cash*, which may have played a role in the increase of the cash demand. In the past, the economy's cash demand followed the course of inflation. The acceleration (slowdown) of inflation – and the parallel increase (decrease) of the opportunity costs of cash – was followed by the decrease (increase) of economic agents' cash demand. However, in the last two years the relation between cash demand and inflation has weakened. Inflation, which started to increase from the second half of 2006, was not accompanied by a drop in cash demand compared to consumption expenditure, but instead by a further increase after some stabilisation (Chart 3). Based on earlier observations, growing inflation alone may have reduced the

² We have no direct data source concerning foreign currency savings.

Chart 3

Cash balance compared to households' consumption expenditure and inflation



Source: MNB.

* Currency in circulation: quarterly averages; consumption expenditure: cumulative figures of four quarters.

** For households' consumption expenditures only estimated figures are available.

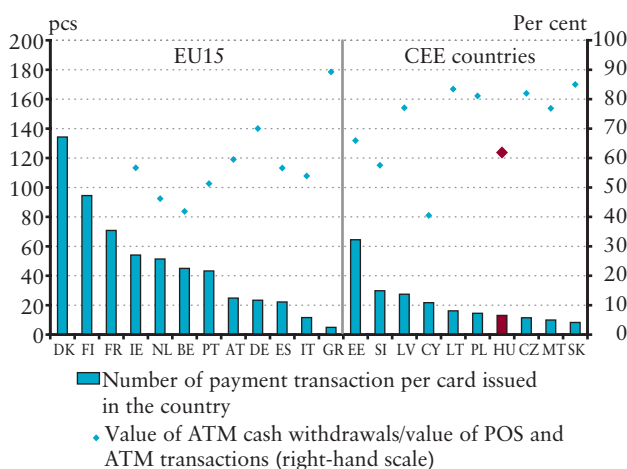
cash demand, but the introduction of the tax on interest income may have offset this impact.

The high cash demand of the Hungarian economy may also be due to the lag in the use of cashless payment instruments. Based on the per capita number of ATM³ and POS⁴ terminals, the level of development of the infrastructure supporting the settlement of cashless payments in Hungary significantly lags behind that of west European countries, and Hungary is not among the forerunners in regional terms either (MNB, 2007).

The relatively lower number of bankcard purchases may suggest a preference for cash use over cashless payment methods. In countries where the number of POS transactions per bankcard is lower, cash withdrawals from ATM represent a higher value within transactions (cash withdrawals, purchases by card) executed on terminals accepting bankcards (POS and ATM). At the same time, regulations prevailing in the various countries – for instance those concerning transaction fees – as well as the fact that cash withdrawal is also possible via POS equipment makes the

Chart 4

Features of payments by bankcard in international comparison, 2006



Source: ECB.

comparability of data more difficult. However, in this connection no data was available to us.

The Hungarian figures present a mixed picture: despite the low number of purchases by bankcard, the volume of cash withdrawals from ATMs is not high either (Chart 4.) One possible explanation may be that in Hungary over 20% of cash withdrawals take place via the POS terminals installed in bank branches and in post offices, leading to a relatively smaller volume of cash withdrawal from ATMs.

Despite the fact that Hungary lags behind in the use of cashless payment methods in cross-sectional comparison, these payment methods are nevertheless gaining ground in Hungary, which in itself should indicate an opposing trend to the increasing cash demand observed in 2006-2007.

Of the previously mentioned factors influencing cash demand, we also examined the evolution of the shadow economy's cash holdings. In our analysis, the definition of shadow economy includes not only illegal economic activities (distribution of narcotics, prostitution, smuggling), but also unreported or "partially reported" economic activities. These include all activities accompanied by tax evasion.⁵ As the name itself suggests, we do not have direct information about the volume of cash used in the shadow economy, however there are several approaches in the literature on methods of estimating it (e.g. Guiborg and Segendorf, 2007; Paunonen

³ ATM (Automated Teller Machine): equipment that allows clients equipped with a proper bankcard to withdraw cash from their bank account, initiate payments and make enquiries about their accounts.

⁴ POS (Point of Sale): equipment that facilitate payment by bankcard (in certain cases cash withdrawal as well) on the vendor's premises.

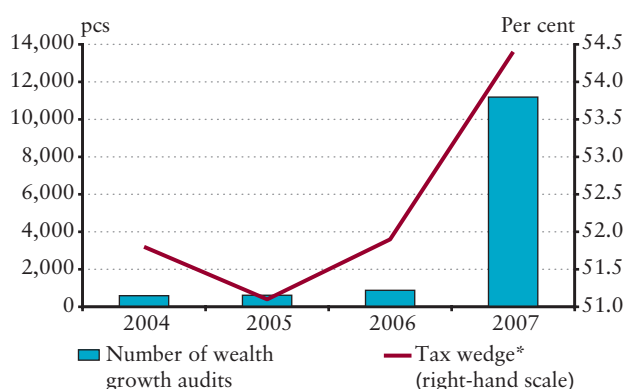
⁵ The statistical approach to the shadow economy differs from this. The System of National Accounts does not classify activities which are not part of production (e.g. smuggling) to the shadow economy. At the same time, the statistical interpretation of the shadow economy includes legal activities subject to registration (production by households for their own consumption).

and Jyrkönen, 2002; Humphrey et al., 2000). We have not made such attempts in our article, but instead have tried to draw conclusions in relation its evolution.

As a result of the increased tax burdens aimed at reducing the budget deficit and of the more stringent measures taken by the tax authority, the shadow economy's cash demand may have increased, which nevertheless does not contradict the view that certain economic activities may have whitened during this period. Part of the measures introduced in the second half of 2006 aiming at a reduction of the budget deficit led to an increase of tax burdens,⁶ which in itself may have pushed economic agents towards higher tax evasion⁷ and thereby to use cash more predominantly. However, the tax increase was accompanied by stricter tax audits and an enhanced fight against feigned contracts. Beside the fact that the impact of economic whitening may be traced through the increase of wages (MNB, 2007) and certain estimations refer to a decrease in the tax base shortfall (Krekó-P. Kiss, 2008), the higher tax burdens and the more stringent tax audits may have led the players of shadow economy to holding higher cash balances in order to hide income (as opposed to the option that the 'hidden' income is placed in bank deposits, for instance). This could particularly be assumed among households (also including private entrepreneurs) – since the main focus of tax audits in terms of taxpayer groups shifted in 2007 towards an increase in the share of households (APEH 2007), the number of wealth audits affecting them multiplied compared to the previous period (Chart 5).

Chart 5

Labour taxes and the number of wealth audits



Sources: APEH, OECD.

* Tax wedge: the personal income tax and the contributions burdening employers and employees in proportion to total labour cost.

RESTRICTION OF CASH USE

We can only suppose that the increase in cash volume can be linked to the expanding cash demand of the shadow economy. However, we can state that the use of cash simplifies the operation of the shadow economy. Hiding income and tax evasion entails higher tax rates, which may have a negative impact on long-term economic growth.

In addition, high cash use – as opposed to more intensive use of cashless payment methods – may burden the economy with extra costs. The literature on the costs and benefits of payment instruments (e.g. Brits-Winder, 2005) discusses the issue of choosing payment methods in detail. In short, this means that by using cash economic agents do not face direct costs like in the case of bankcard payments (e.g. transaction fees). However, at the level of the entire economy cash use is also accompanied by cost elements connected to the manufacturing, storage, transport and control of cash. Thus, what may be an optimal payment method for individual players is not necessarily beneficial for the economy as a whole.

In west European countries there are several examples of the introduction of administrative measures aimed at encouraging the use of cashless payment methods. Some of the regulations employed most frequently in international practice are aimed at tracing the route of payments and transactions and restricting the scope of the shadow economy. One example is the Belgian Royal Decree no. 56 of 1967, which obliges companies to settle payments exceeding a determined amount by cheque or bank transfer. Similarly, a French law stipulates separate limits for companies and individuals, where invoices issued for amounts exceeding these limits can only be settled by cashless instruments. According to Italian regulations, the direct handover of cash exceeding a certain limit should only take place via intermediary institutions controlled by the state. Thus the purchase of goods and services by economic agents with cash can only be performed through the intermediation system. The mediators must always record the amount, the payer, the date and the goods or services purchased. In Finland rental fees may only be paid by cashless payment instruments.

Another type of regulation tries to divert the settlement of transactions to less expensive payment methods at the level of the entire economy. This group includes regulations where the government fully excludes cash from the settlement of wage, transfer and tax payments. In Germany almost all local

⁶ This includes the following: one of the VAT rates was increased from 15% to 20%, a minimum contribution base was introduced, employees contributions were increased and a solidarity tax was introduced.

⁷ In the literature the development of cash holding in the shadow economy is usually captured by variables measuring tax burden (e.g. Fischer et al., 2004; Rogoff, 1998). The higher the tax burden economic agents face, the more motivated they are to avoid taxes.

tax authority cash counters have been closed, obliging economic agents to pay their tax liabilities by bank transfer. The taxation law, the civil service law or the civil service pension law set forth regulations according to which payments by the state can be transferred by the concerned government institution only to a bank account. In Greece government payments – though only above a certain limit – can only be made by bank transfer, while in The Netherlands public institutions must give preference to cashless payment methods over other means of payment.

Attempts have been made in Hungary as well to restrict the use of cash. In the mid 1990s the taxation law was amended to facilitate the better monitoring of companies' revenues. The essence of the law amendment was to create less favourable conditions for cash payments than for electronic payments. For example, only 80% of cash payments exceeding HUF 1 million could be accounted as costs, while in the case of electronic payments the total amount was recognisable as an expense. However, the regulation was in force for less than one year as the Constitutional Court annulled it.⁸ The tax on vault cash – which was planned to be introduced in 2006 – would also have restricted cash use by companies. However, it was cancelled prior to its entry into force.

SUMMARY

The cash demand of the Hungarian economy can be considered high in international comparison. In 2007 the volume of the currency in circulation in Hungary exceeded not only that of the peripheral countries of the euro area prior to introducing the euro, but also that of Central and East European. The restriction of cash use as part of the measures aimed at whitening the economy have also appeared in economic policy discussions.

We tried to identify the factors behind the high cash demand characterising the Hungarian economy by analysing the stylised factors of the currency in circulation. The high cash requirement developed in parallel with the increase of cash demand observed in the last two years and is not explainable by the fundamentals of the economy (economic growth, inflationary processes). In our article we came to the conclusion that the introduction of the tax on interest in 2006 led to increasing cash demand through the diminished opportunity cost of cash holding, as did the increased tax

burden stemming from measures aimed at reducing the budget deficit and the more stringent measures of the tax authority through the growth of cash demand in the shadow economy. Furthermore, the relatively high demand may also be explained by the fact that in international comparison Hungary lags behind in the use of cashless payment instruments.

The use of cash simplifies the operation of the shadow economy, which is unfavourable to long-term economic growth due to hidden income and tax evasion. In addition, the high cash demand – as opposed to more intensive use of alternative payment methods – may burden the economy with additional costs. In developed countries we have seen several examples of administrative measures restricting the use of cash. These are aimed at restricting the scope of the shadow economy, or try to divert the settlement of transactions to less expensive payment methods on the level of the entire economy. Attempts have also been made in Hungary to restrict the use of cash. However, they were in effect only for a short period or did not even enter into force.

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⁸ According to the reasoning of the Constitutional Court, the amendments classify as the abuse of legislative authority since the restriction of cash payments cannot be the function of tax legislation.

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