Ákos Bakonyi and Dániel Homolya: Backtesting the efficiency of MNB's Lending Survey

This article briefly presents the general practice of lending surveys aimed at revealing loan supply behaviour, as well as the literature analysing their usability. The focus of our analysis is the so-called Lending Survey (SLO), conducted by the MNB since 2003. In the context of our backtesting based on data available up to December 2008, we examined whether there were any contradictions in banks' responses and how usable the results were from the perspective of lending and growth forecasts. Based on the results, it can be established that banks are consistent in their answers, so there is a strong relationship between their forward-looking and subsequent, retrospective answers. The correlation between the changes in lending standards and the volume of loan portfolios is weak. This is due to the fact that in the Hungarian banking sector the increase in loan portfolios over the past five years may have been influenced not only by supply-side behaviour, but also by demand for loans and economic growth to a great extent. We also examined the correlation between changes in corporate lending standards and GDP growth, which proved to be significant. Nevertheless, we cannot draw conclusions about the direction of the cause and effect relationship based solely on the establishment of correlation, in other words about whether banks act procyclically or whether corporate lending behaviour plays a decisive role in economic growth. The strength of our analysis is limited by the brevity of the available time series and by the fact that we were unable to observe the entire loan cycle during the period under review. Later, with the expansion of the Lending Survey's data series, it will be worthwhile to pursue our examination.

INTRODUCTION: MOTIVATION AND THE RELATED LITERATURE

Magyar Nemzeti Bank launched its semi-annual Senior Loan Officer's Survey (SLO[1]) in 2003, with the objective of obtaining additional data on lending processes in Hungary besides raw figures, similarly to the practice of other major foreign central banks (FED, ECB, Bank of England, Bank of Japan, etc.).[2] In the context of the survey, we examine the household (housing and consumer) and corporate segments ('normal' corporate financing and commercial real estate loans), as well as the municipal segment since the beginning of 2008, earlier on a semi-annual basis and on a quarterly basis since 2009 Q1. In the survey we requested information from banks and leasing companies regarding loan supply and demand, credit conditions and the developments in portfolio quality. Although several previous analyses based on data from abroad came to the conclusion that a significant relationship can be established between the tightening of credit conditions and the slowdown in lending dynamics, as well as slowing GDP growth indirectly, many still question the usability of SLO surveys in forecasting lending processes. In the article, based on available data in relation to the Hungarian practice we examine to what extent the qualitative answers given in the SLO survey can help

decision-makers with monetary and financial stability-related decisions. The main motivation of the article is that over five years worth of SLO data are now available, and although it cannot be considered a sufficient sample due to the semi-annual frequency, it nevertheless allows the examination of certain correlations. An important characteristic of the period under review is the deepening of the Hungarian banking sector's loan-based intermediation, which appeared primarily in the increase in household loan portfolios. Before analysing Hungarian data, we will summarise the related literature.

Three areas can be distinguished where SLO surveys can help decision-makers. On the one hand, they provide information about the credit market's non-price factors and their evolution, and thus banks' loan supply behaviour and risk sensitivity. On the other, if the correlation between developments in credit conditions, loan portfolio's pace of growth and change in GDP (with a certain lag) is in fact strong, then SLO answers may improve the accuracy of forecasts regarding lending and output. Furthermore, SLO is a possible instrument for independently examining the factors pertaining to loan demand and supply. The question's relevance stems from the fact that the slowing of the loan portfolio's dynamics in itself does not allow any conclusions to be drawn concerning whether the slowdown is due to a

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[1] We use the expressions Lending Survey and SLO alternately in the article, with reference to the MNB's "Senior Loan Officer Survey on Bank Lending Practices" questionnaire-based survey.

[2] A brief comparison with international lending surveying practices is included in the Annex.

drop in loan demand caused by a slowing economy or whether it is due to banks' decreasing loan supply. In the case of the latter, there may still be several reasons: either banks would wish to lend, but are unable to access sufficient funds (credit crunch), or – having recognised the increased risks – banks rationalise their lending by tightening their credit standards; in other words, they are only willing to lend to clients with better creditworthiness (credit rationing). The qualitative information compiled by the SLO survey helps to distinguish between these options and to determine the main factors behind lending processes. The backtesting of this information is especially relevant because in the current financial crisis one of the heralding signs of the problems afflicting financial markets was the introduction of significant tightening measures by commercial banks in developed countries during the course of 2007.

Until the 1980s, the view that the financial intermediary system played an important role in real economic activity was not broadly accepted. Irving Fischer was the first to claim that the Great Depression in 1929 was primarily caused by a series of erroneous monetary policy decisions. The 'revolution' came in the 1980s with the rise of information economics. Thanks to the rapid development of econometrics and other instruments of analysis, economists could demonstrate the real economic effects of lending and interest rates.

This connection materialised in practice in the credit crisis of 1990, in the Asian-Russian crisis of 1997-98 and in the current crisis, when the drying up of credit creates negative fallout on the real economy. Berger and Udell (2003) found that credit markets are procyclical, i.e. they reinforce the swings in economic cycles. During periods of economic upswing, banks' risk sensitivity diminishes and they lend to clients who would be considered too risky under normal circumstances (see the subprime mortgage market). Banks typically grant the lowest rated loans at the end of the economic upswing. The other end of the spectrum is the credit crunch, in which the economy – already burdened by difficulties – is further weakened by the fact that well-functioning, creditworthy companies are unable to access loans. There may be several reasons behind this procyclical behaviour. On the one hand, banks' excessive risk aversion or risk assumption in function of the cycle, the similar cyclical changes in the capital situation, short-term profit maximisation and an unhealthy level of competition between banks may be responsible. Berger and Udell's answer to the question is the so-called institutional memory theory, according to which the risk sensitivity of senior loan officers

Chart 1

Correlation between the answers given to the FED's Lending Survey regarding the corporate segment, loan growth rate and economic recessions
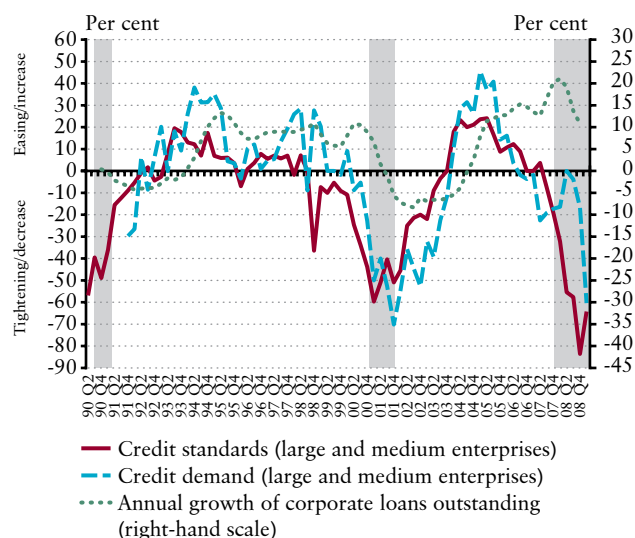
Note: The areas shaded in grey represent the periods when the US economy was in recession. The chart shows the difference between the proportion of banks signalling tightening and those signalling easing of credit standards, while in the case of loan demand, it shows the difference between the proportion of those who perceived growth and those who perceived decline.

Source: Fed.

gradually decreases as they draw farther away from the last recession, until the next downturn. Chart 1 illustrates the above findings and reveals that recessions in the US economy over the past nearly two decades have been preceded by a tightening of credit standards, a decline in the perceived loan demand and a slowdown in lending.

It is important to distinguish between *credit standards* and *credit conditions* when examining loan supply behaviour. Although the two often become muddled in practice, in the past we have used the two notions separately in the MNB's surveying practice due to their differing content. Credit standards define the type of borrower a bank extends loans to based on various criteria (segment, company size, geographical location), as well as the types of loan it extends to the various groups (for example only secured loans to certain segments). In contrast, credit conditions are the set of price (spread, risk premium, fees) and non-price factors (loan to value ratio, covenant requirements).[3] Non-price factors play an important role in forming lending tendencies on the credit market. A good example is the aforementioned credit rationing. When banks want to decrease their lending activity, they stop increasing interest rates after a certain

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[3] For the sake of easier answering, since the beginning of 2009 we have also inquired about changes in credit conditions and standards jointly.

point and tighten credit conditions instead. They can thus avoid the negative effects of interest rate hikes: namely higher interest rates pushing borrowers towards riskier behaviour and riskier clients being the ones who take out new loans (as higher interest payment can only be paid with higher profitability, which in turn requires riskier activity). Both effects would have negative consequences on the loan portfolio's quality, therefore banks prefer to tighten non-price factors instead.

Over the past one and a half years, the greatest risk to the global financial system has been the subprime mortgage crisis and all its consequences. In their article, Ariccia et al. (2008) demonstrated that the easing of credit standards and conditions was the main motor of the extensive lending boom of recent years in the US. The current crisis reinforces the view that non-price factors play an important role in lending and economic processes, and that these factors should be taken into consideration when preparing forecasts.

As of this point, our analysis examines the efficiency of the MNB Lending Survey and its usability as an instrument of 'early forecasting'. First, we analyse the internal consistency of SLO answers, in other words the relationship between forecasted SLO answers and retrospective SLO answers given in the course of the subsequent survey. Second, we examine the relationship between SLO answers and actual lending data. Finally, we analyse the Lending Survey's forecasting capability, i.e. we examine whether any relationship can be established between forward-looking SLO answers and the lending and GDP data observed in the subsequent periods.

BACKTESTING METHODOLOGY[4]

The answers given in the course of the Lending Survey range on a scale from one to five and express in a qualitative manner the steps taken, planned or expected by institutions regarding willingness to lend, loan demand, credit standards/conditions, risk parameters and the risk perception of various sectors. For example, in the case of credit conditions, 1 represents significant tightening, 2 represents some tightening, 3 represents no change, 4 represents some easing, while 5 represents significant easing. In the case of answers expressing quantitative factors (loan demand, willingness to lend), 1 represents significant growth, 2 represents some growth, 3 represents no change, 4 represents some decline, while 5 represents significant decline.

We used the net change indicator when aggregating answers. The net proportion of respondents reporting tightening, for example, is obtained by deducting the proportion of respondents reporting loosening from those indicating tightening. In the past we employed equal weighting in the publication of the survey's results, i.e. answers given by smaller banks had the same value as those given by larger banks. In contrast, in this analysis and in future lending surveys, we weight SLO answers according to market share in outstanding loan amount in the publication of results (unless otherwise stated).

Regarding the qualitative nature of SLO answers, we sought econometric tools which were suitable for examining the strength of a relationship between variables measured on two ordinal scales or on one ordinal and one interval scale. The Pearson correlation coefficient examines the relationship between two variables measured on interval scales; it can therefore only be used in our case regarding aggregate answers. In contrast, rank correlation can also be used in the case of ordinal scales, accordingly we use two versions of it (Spearman's rho and Kendall's tau) for analysing individual bank answers.

With the help of rank correlation, we examine whether any significant relationship can be established between the order of data in the two time series. The relationship between two variables is considered strong if the relationship has a significance of 5% based on both variables. Similarly to the 'traditional' linear correlation indicator, Spearman's rho and Kendall's tau both vary between -1 and +1; the bigger the absolute value of the given indicator, the stronger the relationship. A value of +1 corresponds to perfect correlation, while -1 represents perfectly opposing correlation. In the tables presented further below, significance reflects the probability that the value of the given indicator is zero, i.e. that there is no relationship between the two time series.

As only 12 data items are available per bank for each factor (the survey has been carried out since 2003 on a semi-annual basis, with the last observation being the data from the survey conducted in July 2008), we consider individual bank answers independent variables, i.e. we analyse each individual bank answer in one time series. Of course the assumption of independence may be tainted due to the mutual effects of market actors on each other; however, this approach may increase the significance of the measured correlations due to the increased number of

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[4] In the tables of the following chapters, we generally only present significant relations. The analysis encompasses the examination of lending survey data available up to December 2008.

Table 1

Consistency between answers in the Lending Survey based on rank correlation indicators

Lending segment	Parameters	Spearman's rho	Spearman's rho significance	Kendall's tau	Kendall's tau significance	Number of elements
Housing loans	Credit standards	33.8%	0.2%	30.7%	0.2%	82
	Credit demand	24.9%	2.4%	21.6%	2.2%	82
	Housing prices	21.2%	5.5%	20.1%	5.5%	82
Consumer loans	Credit standards	28.7%	0.3%	26.2%	0.3%	109
	Credit demand	29.4%	0.2%	25.6%	0.2%	109
Corporate loans	Credit standards	29.9%	0.8%	28.0%	0.9%	77
	Credit fees	23.6%	3.9%	22.7%	3.9%	77
	Credit spreads	37.2%	0.1%	35.7%	0.1%	77
Commercial real estate loans	Credit standards	22.6%	4.9%	21.4%	4.7%	77
	Credit demand	32.5%	0.4%	25.6%	0.4%	77

Note: Parameters are measured on a scale from 1 to 5, as described above. In the case of credit standards and conditions, 1 represents significant tightening, while 5 represents significant easing. In the case of willingness to lend, loan demand and housing prices, 1 represents a significant increase, while 5 represents a significant decrease. A description of Spearman-rho and Kendall-tau indicators is available on page 8.

observations in the time series. Consequently, the results of this analysis primarily allow the introduction of test research outcomes.

Before presenting the results in greater detail, we would like to remark that in the course of our analysis we only examined household and corporate lending, as the municipality segment has only been surveyed since January 2008 in the context of the Lending Survey. Accordingly, we examine the answers of four subsegments: consumer and housing lending, corporate lending and commercial real estate lending.

CONSISTENCY BETWEEN FORWARD-LOOKING SLO ANSWERS AND THE RETROSPECTIVE SLO ANSWERS GIVEN IN THE SUBSEQUENT SURVEY

In the Lending Survey we inquired retrospectively about the previous half-year and in a forward-looking manner about the upcoming half-year regarding most parameters. Overall, based on the analysis it can be declared that forward-looking and retrospective SLO answers are consistent with each other: the relationship between the answers given regarding credit standards is significant at 5% in all of the four loan categories, and in three out of four cases in answers regarding loan demand.

Furthermore, answers regarding housing price movements in the case of housing loans and answers regarding fees and spreads in the case of corporate loans are consistent with themselves.

RELATIONSHIP BETWEEN RETROSPECTIVE SLO ANSWERS AND ACTUALLY OBSERVED CREDIT CONDITIONS

In the lending survey of MNB, we inquired in a qualitative manner about lending parameters in relationship to which specific numerical data were available. These include changes in credit spreads (the part of loan interest in excess of the cost of funds) in the case of consumer, housing and corporate lending, as well as changes in the employed maximum loan-to-value ratio (popularly referred to as LTV in the banking industry) of housing loans. Contrary to our expectations, we found no statistically significant relationship, which may be due to two reasons: on the one hand, the low number of sample elements, and, on the other, the fact that the deepening of lending went hand in hand almost continuously with the easing of credit conditions, which may distort answers.

RELATIONSHIP BETWEEN SLO ANSWERS AND THE ACTUAL LENDING AND ECONOMIC GROWTH DATA OF THE SUBSEQUENT PERIOD

In light of the research outcomes based on the FED's Lending survey, our hypothesis is that answers given regarding credit conditions and standards appear in the developments in the observed credit conditions, among which data are available on spreads above the cost of funds and loan-to-value (LTV) ratios, and are reflected in the changes in lending dynamics and

Table 2

Forecasting capacity of SLO answers

	Parameter 1	Parameter 2	Spearman's rho	Spearman significance	Kendall's tau	Kendall's tau significance	Number of elements
Housing loans	Demand	Forint spread	-32.9%	0.4%	-25.2%	0.5%	74
	Demand	70%+LTV	-24.2%	5.8%	-19.2%	5.6%	62

Note: Parameters are measured on a scale from 1 to 5, as described above. In the case of credit conditions, and therefore spreads and LTV, 1 represents significant tightening, while 5 represents significant easing. In the case of loan demand, 1 represents a significant increase, while 5 represents a significant decrease. A description of Spearman-rho and Kendall-tau indicators is available on page 8.

economic growth with a certain lag. Based on our results, we cannot say in general that individual bank forecasting SLO answers and actual lending data comove significantly. We will first present the results obtained and then give a possible explanation as to why there are no significant results as of yet.

In the case of credit conditions, we found certain statistical correlations regarding housing loans which may seem surprising. In this segment, there is a very strong covariance between forward-looking answers regarding loan demand and changes in the average semi-annual HUF interest margin. The relationship between forecasted demand and changes in the proportion of housing loans with an LTV of over 70% within the portfolio is of medium strength, and the negative correlation coefficient signifies that the proportion of loans with an LTV of over 70% is increasing in parallel with demand.

In line with the usual backtesting practice of lending surveys, we also examined whether there is any significant relationship between the increase in loans, changes in

willingness to lend and the tightening or easing of credit standards. Chart 2 and Chart 3 allow the visual inspection of the relationship between the growth in loans and credit standards. The charts illustrate that in the household segment, banks have given accounts of quasi continuous easing or slight tightening since the survey was first introduced, while in the corporate segment, the major market actors, based on their accounts, have continuously tightened their conditions further since June 2007. The pertaining chart does not reveal any tendency-like relationship at first glance (mainly due to the brevity of the time series), which nevertheless in itself does not mean there is no statistically measurable relationship. Accordingly, the statistical results are worth presenting.

In the course of the analysis, we examined the relationship between changes in past and forward-looking credit standards and future (T+1 half year, and T+2 half years) loan growth. In former surveying practice, retrospective data were available on changes in willingness to lend,

Chart 2

Developments in standards of creditworthiness and exchange rate filtered quarterly net borrowing on the housing and consumer loan market (net proportion of respondents reporting tightening, equally weighted answers)
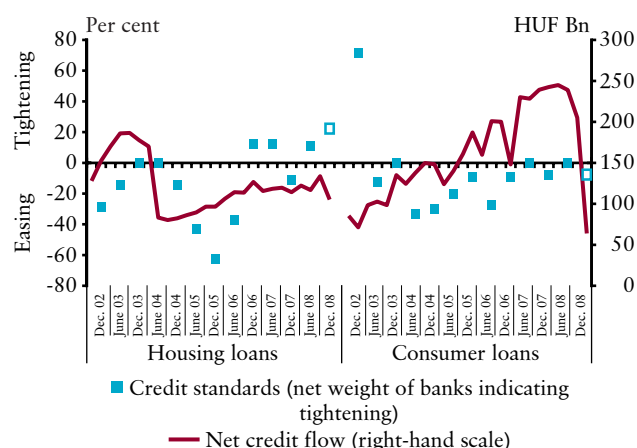
Source: MNB.

Chart 3

Developments in standards of creditworthiness in the corporate segment (net proportion of respondents reporting tightening, equally weighted answers) and the annual growth rate of the loan portfolio

(exchange rate filtered data)
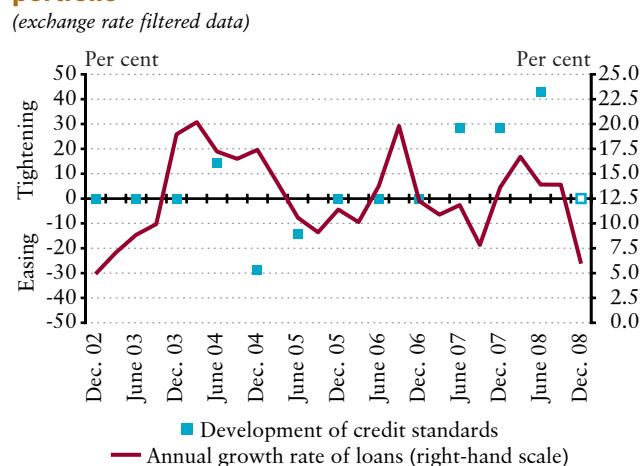
Source: MNB.

therefore we examine the relationship thereof with future loan growth. To measure changes in the lending portfolio, we used exchange rate filtered, moving average (to exclude seasonal effects) net borrowing in the case of household lending, as using growth rates would be misleading due to the potential distortion of the so-called base effect. With corporate lending, we applied annual growth rates pertaining to exchange rate filtered portfolios (thereby excluding seasonal effects). As aggregate Lending Survey data appear as percentages on a continuous scale between -1 and 1, the linear correlation coefficient can be used when analysing them, as described above. The strength of our analysis is limited by the shortness of the available time series and by the fact that during the period under review, we did not observe the whole loan cycle.

Household loans

In the course of our analyses, we did not find any significant relationship between credit standards and changes in willingness to lend, and the increase in the loan portfolio in the household lending segment (housing and consumer lending). The forecasted tightening measures showed same-direction covariance with the larger degree of loan growth, i.e. a further loan growth could be observed despite tightening. Regarding household lending, the shortness of the time series was probably responsible for the relatively few significant relations between variables on the one hand, while the deepening of financial intermediation in the Hungarian economy should also be taken into account on the other. Based on the lack of significant relations, we can conclude that other factors besides supply side behaviour, for example demand and economic convergence (i.e. in the case of a

converging economy) play a role in the evolution of the credit market's equilibrium.

Corporate loans

Examining corporate lending, we found stronger results, more in line with our preliminary expectations compared to household lending. As illustrated by Table 3, the net proportion of respondents carrying out tightening shows opposite movement compared to the loan portfolio's pace of growth; in other words, the more respondents tighten their lending, the lower the loan portfolio's level of growth. In addition, the lower part of the table shows that an increase in the willingness to lend comoves with the increase in the loan portfolio. Although these results are in line with our intuitions, they are statistically not significant due to the short review period. We also obtained similar results based on the data considering individual bank observations.

In foreign SLO backtesting practice, correlations with GDP growth are usually also examined besides relationship with loan aggregates. The answers regarding corporate loan supply behaviour and domestic GDP growth yield a statistically significant relationship despite the short time series. Table 4 shows that every analysed relationship (both retrospective and forward-looking, between standards, changes in willingness to lend and GDP growth) is significant. In other words, tightening by banks covariates with a decrease in GDP, while the increase in willingness to lend covaries with an increase in GDP. Obviously, we cannot conclude from this simple correlation analysis which factor moves the other, i.e. whether banks behave procyclically

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Table 3

Forecasting ability of SLO answers in the case of corporate loans

Variables examined		Correlation	Level of significance	Number of observations
Standards (net proportion of respondents reporting tightening)	Growth (changes in the loan portfolio)			
Past	Future (T+1)	-27.5%	38.7%	12
Forecast	Future (T+1)	-18.2%	57.2%	12
Forecast	Future (T+2)	-49.5%	12.1%	11

Variables examined		Correlation	Level of significance	Number of observations
Willingness (net proportion of those with increasing willingness)	GDP growth rate			
Past	Future (T+1)	38.7%	21.4%	12
Past	Future (T+2)	52.0%	10.1%	11

Table 4

Relationship between corporate SLO answers and GDP growth

Variables examined		Correlation	Level of significance	Number of observations
Standards (proportion of those tightening)	**GDP growth rate**			
Past	Past	−79.9%	0.2%	12
Past	Future (T+1)	−81.3%	0.1%	12
Forecast	Future (T+1)	−55.6%	6.1%	12
Forecast	Future (T+2)	−64.6%	3.2%	11

Variables examined		Correlation	Level of significance	Number of observations
Change in willingness (net proportion of those with increasing willingness)	**GDP growth rate**			
Forecast	Past	71.9%	0.8%	12
Forecast	Future (T+1)	91.0%	0.0%	12
Forecast	Future (T+2)	93.0%	0.0%	11

Note: The semi-annual rate of GDP growth was calculated based on seasonally adjusted quarterly data.

(easing their conditions during upswings and tightening them during economic downturns) or whether corporate loan supply behaviour significantly influences economic growth. This is further reinforced by the fact that we also obtain a strongly significant correlation if we examine the relationship between the previous period's GDP growth and corporate credit standards and willingness to lend.[5]

CONCLUSIONS

In our analysis we presented the main characteristics of the Lending Survey conducted by the MNB and analysed the consistency of SLO answers with themselves and with actual data, as well as their forecasting ability. Based on the econometric analysis, it can be concluded that banks forecast their subsequent behaviour effectively, i.e. they are consistent in their answers. At the same time, no significant relationship can be observed with the changes in loan aggregates. The signs of correlation indicators in the case of corporate lending are in line with our expectations, that is to say the tightening of credit standards goes hand in hand with a decrease in loan portfolios. The relationship with household loans was contrary to our expectations, which may partly be due to the shortness of the time series and partly to the deepening of financial intermediation and the importance of demand-side factors besides loan supply behaviour. We examined the relationship between changes in corporate lending standards and GDP growth, which proved to be significant. We found that tightened lending covaries with a

decrease in GDP in both a retrospective and forward-looking manner, while increased willingness to lend goes hand in hand with an increase in GDP. Nevertheless, we cannot draw conclusions on the cause and effect relationship or its direction from the sole fact of observed covariance, that is on whether banks behave procyclically or whether economic growth is significantly influenced by corporate loan supply behaviour or whether there are joint explanatory factors. The strength of our analysis is limited by the shortness of the available time series and by the fact that we were unable to observe the entire loan cycle during the period under review. Later, with the expansion of the Lending Survey's data series, it will be worthwhile to pursue our examination.

REFERENCES

Ariccia, G. D., D. Igan and L. Laeven (2008): "Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market", *IMF Working Paper,* WP/08/106.

Berg, J., A. Van Rixtel, A. Ferrando, G. De Bondt and S. Scopel (2005): The Bank Lending Survey for the Euro Area (February 2005), *ECB Occasional Paper* No. 23.

Bernanke, B. S. and A. S. Blinder (1988): "Credit, Money and Aggregate Demand", American Economic Review, Vol. 78, No. 2, *Papers and Proceedings of the One-Hundredth Annual Meeting of the American Economic Association,* pp. 435-439.

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[5] It should be noted that we found no significant or economically interpretable correlation relationship between responses related to household lending and the GDP growth rate.

BERGER, A. N. AND G. F. UDELL (2003): "The Institutional Memory Hypothesis and the Procyclicality of Bank Lending Behaviour", *BIS Working Papers* No. 125, January 2003.

BETHLENDI, A. (2003): What Is the Lending Survey Good For?, Magyar Nemzeti Bank
http://english.mnb.hu/Resource.aspx?ResourceID=mnbfile&resourcename=lending_survey.

BETHLENDI, A. AND K. BODNÁR (2005): "Structural changes of the Hungarian Credit Market. Experiences of the lending survey", *Hitelintézeti Szemle*, Vol. 4, No. 3, pp. 1-21.

CINNINGHAM T. J. (2006): "The Predictive Power of the Senior Loan Officer Survey: Do Lending Officers Know Anything Special?", *Working Paper* 2006-24, FRB of Atlanta Working Paper No. 2006-24, November 2006, http://econpapers.repec.org/scripts/redir.pl?u=http%3A%2F%2Fwww.frbatlanta.org%2Ffilelegacydocs%2Fwp0624.pdf;h=repec:fip:fedawp:2006-24.

GÜNER, A. B. (2008): "Bank lending opportunities and credit standards", *Journal of Financial Stability* 4 (2008), pp. 62-87.

GURLEY, J. G. AND E. S. SHAW (1955): "Financial Aspects of Economic Development", *American Economic Review,* Vol. 45, No 4, pp. 515-538.

HIDA, N., K. FUJITA, M. IHARA AND N. BABA (2002): "What do we learn about current developments in the bank lending market in Japan from BOJ's Senior Loan Officer Opinion Survey?", *Market Review,* December 2002.

KEETON, W. R. (1999): "Does Faster Loan Growth Lead to Higher Loan Losses", *Federal Reserve Bank of Kansas City Economic Review,* June 1999, pp. 57-74.

LOWN, C. S., D. P. MORGAN AND S. ROHATGI (2000): "Listening to Loan Officers: The Impact of Commercial Credit Standards on Lending and Output", *Federal Reserve Bank of New York Economic Policy Review,* July 2000, 6, pp. 1-16.

LOWN, C. S. AND D. P. MORGAN (2004): *The Credit Cycle and the Business Cycle: New Findings Using the Loan Officer Opinion Survey,* Stockholm Institute for Financial Research.

SCHREFT, S. L. AND E. O. RAYMOND (1991): "Survey Evidence of Tighter Credit Conditions: What Does It Mean?", *Working Paper* 91-5 (May), Federal Reserve Bank of Richmond.

STIGLITZ, J. E. AND A. WEISS (1981): "Credit Rationing in Markets with Imperfect Information", *American Economic Review,* Vol. 71, No 3, pp. 393-410.

ANNEX: THE INTERNATIONAL PRACTICE OF LENDING SURVEYS

As mentioned in the article's introduction, the Magyar Nemzeti Bank Lending Survey practice is in line with similar surveys conducted by other central banks. Table 5 shows the main characteristics of the Lending Surveys carried out by the central banks in the United Kingdom, Japan, Lithuania and Poland, the European Central Bank and the US central bank, the Federal Reserve.[6]

The surveying practices mainly converge from the perspective of questions. At the same time, their processing methodology and the segments examined may differ based on the size of the given banking sector.

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[6] Besides these central banks, according to our knowledge the Turkish central bank also conducts a survey examining loan supply tendencies (http://www.tcmb.gov.tr/ucaylik/bankakrean/bankakreaneyeni.html).

Table 5

Characteristics of the Lending Surveys of central banks

	Magyar Nemzeti Bank (central bank of Hungary)	Bank of England	Bank of Japan	ECB	Fed	Bank of Lithuania	National Bank of Poland
Published objective of the survey	Exploring loan supply behaviour, analysis of non-price factors	Monetary and financial stability aims: understanding of lending trends and of credit conditions	Understanding Japanese lending market tendencies, examining its role in monetary transmission, similarly to the FED's practice	A better grasp of the role of bank lending in the business cycle and monetary transmission, providing support for monetary policy decision-makers	Better understanding of bank lending processes and trends, as well as a better grasp of the role of lending in the business cycle and monetary transmission	Acquiring information on non-interest rate credit conditions, developments in the cost of funds and banks' expectations	Gaining an understanding of changes in the Polish banking system's loan supply (standards and conditions) and loan demand behaviour
Frequency	Previously semi-annual, quarterly as of 2009	Quarterly	Quarterly	Quarterly	Quarterly	Semi-annual	Quarterly
Start	2003 H1	2007 Q2	2008 Q2	2003 Q2	1964	2006 H2	2004
Segments examined	Households' lending, corporate lending, municipal lending	Retail lending (secured and unsecured), corporate lending	Non-financial firms (large, medium and small enterprises), households (housing and consumer loans), local municipalities (a total of 13 questions)	Corporate and household (housing and consumer loans) lending	Corporate and retail lending	Retail lending (housing and other consumer), Corporate lending	Non-financial firms (large enterprises, SME); Retail (housing loans, other consumer loans)
Number and market share of banks surveyed	Household lending: 13 banks - housing loans 9 banks, consumer loans 13 bank + 6 leasing companies Corporate loans 7 banks; municipal loans 6 banks	Not disclosed, but approximately 10-15 banks per segment, with market share of 75-85%	TOP 50 banks are queried, accounting for 74% of the market (the list is reviewed every 3 years)	112 banks, approx. 40% market share	Most recently 52 domestic banks and 21 foreign bank branches/ "agencies"	11 banks	24 banks, 75.9% of the banking sector portfolio
Processing methodology (weighting)	Proportion of net increases/those tightening(%) (previously equal weighting, market share-based weighting as of March 2009)	Proportion of net increases/those tightening(%) Weighting: market share-based weighting + slight and considerable tightening weighted differently (weighting of slight tightening/ easing 0.5) ("diffusion index")	Proportion of net increases/those tightening(%) Weighting: market share-based weighting + slight and considerable tightening weighted differently (weighting of slight tightening/ easing 0.5) ("diffusion index")	Proportion of net increases/those tightening(%) Weighting: equal weighting within the country, use of country weights within the EU	Proportion of net increases/those tightening(%) (equal weighting)	Proportion of net increases/those tightening(%) Weighting: equal weighting	Proportion of net increases/those tightening(%) factors: contributes to easing or tightening
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