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Spanish deposit-taking institutions' net interest income and low interest rates

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This article reviews how Spanish deposit-taking institutions' net interest income has evolved in recent years and explores the main underlying factors, which include the low levels of interest rates. For this purpose, three alternative breakdowns of net interest income are considered. The first shows how the volume of credit and the non-performing loan ratio have been as –or more– significant than net income per unit of assets in explaining the performance of net interest income since the start of the crisis. The second shows the historical importance for Spanish institutions of implicit income from payment services and its loss of significance in the current context of negative short-term market rates. The third illustrates how, since the onset of the crisis, there has been a rise in the yield spread between new lending and interbank rates, which may be partly due to the way in which institutions are responding to low interest rates.

SPANISH DEPOSIT-TAKING INSTITUTIONS' NET INTEREST INCOME AND LOW INTEREST RATES

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Introduction

Three years after the Spanish economy began to recover, Spain's deposit-taking institutions, like their counterparts elsewhere in Europe, are still registering relatively low levels of net interest income. This is partly due to the current atypical state of policy interest rates, which are extremely low, and even negative, in the euro area. This tends to depress net interest income, given the natural reluctance of retail customers to accept negative remuneration when they deposit their money with these institutions. Therefore, as short-term interest rates approach zero or even turn negative, deposit-taking institutions find it ever harder to reduce their borrowing costs further to compensate for declining returns on their assets, thus squeezing their net interest income (the difference between the money the institution receives for its assets and that which it pays for its liabilities). However, this is not the only –or necessarily the most important– factor explaining the current low level of interest income.

This article sets out to analyse the various factors that have affected how deposit-taking institutions' net interest income from their business in Spain has performed in recent years, focusing, in particular, on discussing the implications of low interest rates. For this purpose, three alternative breakdowns of how net interest income has evolved are considered. The reason for focusing on operations in Spain is that the effect of the euro area's current low interest rate environment on this business is clearest. By contrast, foreign operations are mostly located outside the euro area, and so driven by other factors. Moreover, as the majority of Spanish institutions do most of their business in Spain, any conclusions obtained are directly applicable to them..

The following three sections analyse three alternative breakdowns of net interest income. The first two refer to the total, while the third refers to interest margins on new business.

Non-performing loans, asset volume and margins

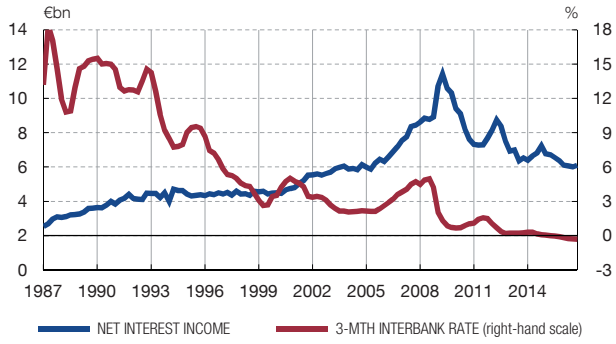
Net interest income is defined as the difference between the interest deposit-taking institutions receive on their financial assets and that which they pay on their liabilities. It is therefore affected by both the difference between the average return on assets and the average cost of borrowing (net interest margin), as well as by the volume of these assets and liabilities. Furthermore, the non-performing loan (NPL) ratio also affects net interest income, as an asset's being classed as such means that the interest is not being paid, so is not recorded as income on the profit and loss account. This section breaks down Spanish deposit-taking institutions' net interest income in the recent past into three components: net interest margin, asset volume, and the NPL ratio.

Chart 1.1 shows how Spanish deposit-taking institutions' net interest income from their domestic business has evolved, expressed in billions of euros. As can be seen, there was an almost unbroken upward trend from 1987 to 2008, after which the trend was clearly downwards, albeit with some fluctuations. This second phase basically coincides with the period in which policy interest rates have been close to zero or negative, illustrated on the chart showing the three-month interbank deposit rates. Nevertheless, there is no clear-cut historical correlation between net interest income and short-term interest rates. For instance, the sharp fall in interest rates between 1992 and 1999 was not accompanied by a drop in net interest income, which highlights the importance of changes in the volume of assets (see Chart 1.2) and the NPL ratio.

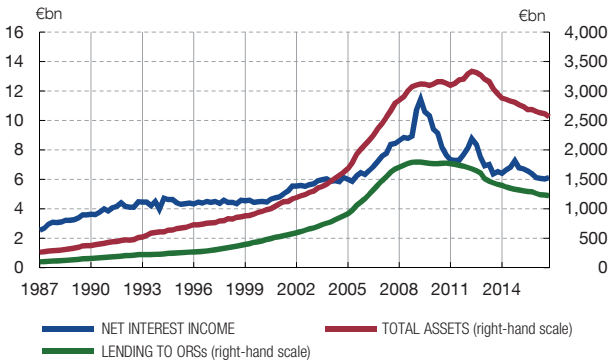
NET INTEREST INCOME, ASSETS AND NPL RATIOS OF DEPOSIT-TAKING INSTITUTIONS IN SPAIN

CHART 1

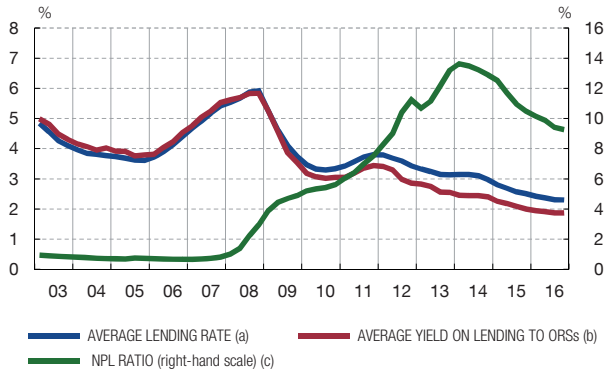
1 NET INTEREST INCOME AND SHORT-TERM RATES



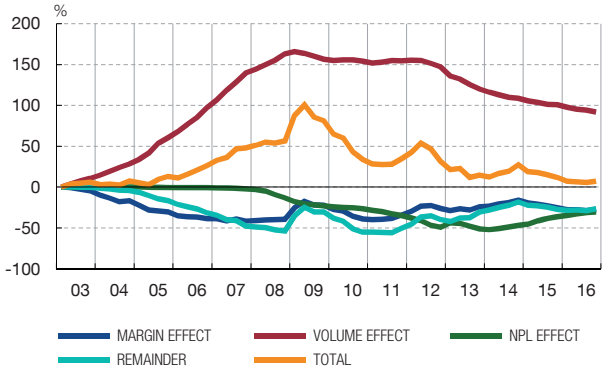
2 NET INTEREST INCOME AND ASSETS



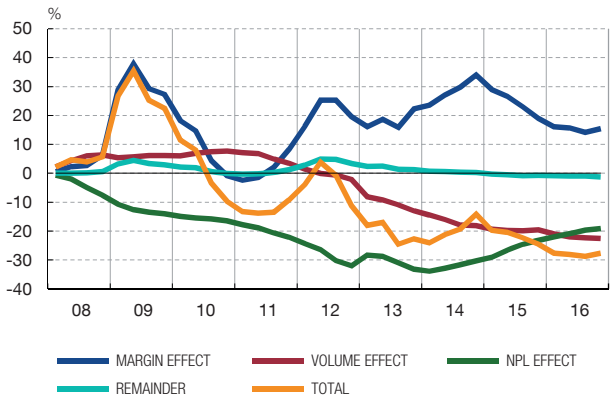
3 LENDING INTEREST RATES AND NPL RATIO



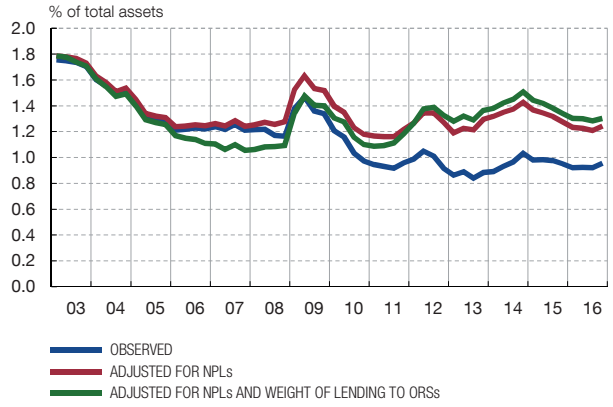
4 BREAKDOWN OF CHANGE IN NET INTEREST INCOME SINCE MARCH 2003



5 BREAKDOWN OF CHANGE IN NET INTEREST INCOME SINCE DECEMBER 2007



6 NET INTEREST MARGIN



SOURCES: Banco de España and own calculations.

a Interest rate (NDER) of outstanding balances of lending to households and non-financial corporations.
b Financial revenue from lending to ORSs divided by average balance.
c Ratio of NPLs to total lending to ORSs.

For the purposes of the aforementioned breakdown, the impact of NPLs was first estimated. This can be inferred by comparing the average interest rate on all outstanding loans to households and non-financial corporations (obtained from the harmonised Eurosystem interest rate statistics) and the average return recorded on the profit and loss account as being obtained from lending to other resident sectors (ORSs),[1] calculated as interest received divided by the average balance of lending. In the former case, the average rate on outstanding loans is reported, irrespective of whether current on payment or not, while in the latter, only interest effectively collected is registered. Consequently, the difference between them can basically be attributed to the effect of non-performing loans.[2] Indeed, as Chart 1.3 shows, the two series only started to diverge in 2008, as the NPL ratio on lending to ORSs began to rise as a result of the emerging crisis, such that the NPL ratio explains 97% of the difference over time. This close correlation makes it possible to estimate the returns on lending that deposit-taking institutions would have achieved had the NPL ratio remained constant. The difference between this ratio and that effectively obtained, multiplied by the volume of lending, gives an estimate of the impact of NPLs.

The volume effect is estimated here as the change net interest income would have undergone if average costs and returns, adjusted for the NPL ratio in the case of the latter, and the proportion of total assets represented by lending to ORSs, had remained constant. The effect therefore takes into account the changes deriving from the way the balance sheet total and its composition changed. The reason for singling out lending to ORSs is that this is the item with the highest interest yield of all deposit-taking institutions' assets. Consequently, changes to it have a bigger impact on the profit and loss account than changes in total assets.

Finally, the margin effect is obtained by keeping the volume of assets and lending to ORSs constant, and letting their average returns –adjusted for NPLs– vary.

The breakdown of net interest income into the various effects can be seen in Chart 1.4, for the period since March 2003 (the earliest date for which the necessary information is available), and in Chart 1.5, for the period since December 2007 (when the NPL ratio began to rise as a result of the crisis). The series labelled "Remainder" comprises the unexplained part of the total change observed, resulting from the fact that the breakdown is a linear approximation. Chart 1.6 shows the observed net interest margin (income per unit of assets), adjusted for the NPL ratio and changes in the relative weight of lending.

As Chart 1.4 shows, in December 2016 (the most recent date for which data are available), the net interest income was at approximately the same level as in early 2003, in absolute terms (measured in euros). This is due to the fact that the negative effects of the shrinking of net interest margin, the NPL ratio and the remainder was somewhat more than compensated for by the strong growth in the volume of assets and lending between these two dates. Thus, at end-2016, despite the drop since the start of the crisis, the levels of total assets and lending were still around 97% and 82% higher than their levels at the

1 Other resident sectors include households, non-financial corporations and financial corporations other than credit institutions resident in Spain.

2 The two series use slightly different concepts of lending and interest. The average return on lending includes all lending to ORSs and comprises both interest and fees registered as financial revenue. By contrast, the average rates on the outstanding amounts refer to lending in euros to households and non-financial corporations resident in the euro area and the narrowly defined effective rate (NDER, equivalent to APR without fees). Nevertheless, as can be seen in the chart, the differences are small and, apart from a slight difference in level due to the inclusion of fees in one case but not in the other, the time course of both series before the upturn in the NPL ratio during the recent crisis was very similar.

start of 2003. It should also be noted that net interest margin (which, as explained, is measured here corrected for the impact of changes in the NPL ratio and the relative weight of lending) had begun to shrink before the start of the crisis. This effect has been fluctuating up and down since December 2007 (see Chart 1.5), but has not declined further, such that the total drop in net interest income (28%) taking place since then is basically explained by volume and NPL effects. Nevertheless, a narrowing of unit margins has been apparent since 2015, coinciding with the recent sharper drop in the short-term market interest rates (see Chart 1.6).[3,4]

Nevertheless, these findings should be interpreted with caution as the variations in the three effects mentioned are not independent from one another. Thus, for instance, a negative volume effect may be a result exogenous to institutions (through reduced demand for lending), but may also, in part, be a consequence of their own decisions on margins (tighter lending conditions in order to preserve these margins). The breakdown exercise presented does not make it possible to distinguish between the ultimate causes of these changes, but it does show that it would be inappropriate to concentrate solely on the impact of one of the components of net interest income rather than consider them all.

Payment services and financial intermediation

An alternative breakdown of net interest income is that based on the distinction between the two basic services the banking system traditionally provides: intermediation between savers and investors, and payment services.[5] Banks charge some fees and commissions for these services, but obtain the bulk of their earnings from the spread between the returns on their assets and the cost of their liabilities. Thanks to their capital, diversification of credit and liquidity risks, and economies of scale, banks can offer their depositors financial instruments with a high degree of security and liquidity, while investing in riskier longer-term instruments. Deposit-taking institutions' earnings from their intermediation activity derive from the higher yields on their lending than on their borrowing. Moreover, the possibility of making payments using some of these bank liabilities makes them more attractive to savers than other equally liquid and safe instruments lacking this option, such that they are willing to accept a lower return. This lower return also contributes to deposit-taking institutions' net interest income.

Thus, net interest income can be broken down into the part deriving from payment services, and the part relating to intermediation activity. For this purpose, a reference interest rate for a safe and liquid asset that cannot be used directly to make payments is needed.

Chart 2.1 shows the historical trend in the interest rate on sight deposits and savings deposits from ORSs –taken as the part of banks' liabilities that allow payments to be made and received– together with a reference interest rate, which is that of one-day government debt repurchase agreements. This type of transaction has risk and liquidity characteristics that are very similar to those of sight deposits, as they are very short term (one day) and very low risk (both as a result of the term and the government debt collateral). The basic difference is therefore that they do not allow payments. As can be seen, in the second half of the eighties, the interest on sight deposits was significantly below the reference market

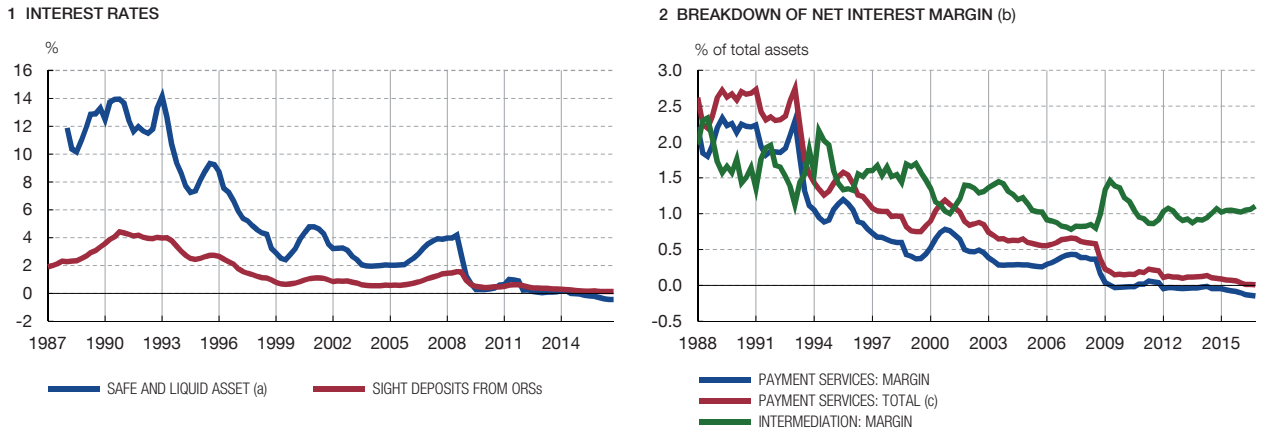
3 Note that this does not necessarily imply that the low interest rate policy has had a net contractionary effect on the net interest income, as to evaluate this it would also be necessary to take into account what would have happened to the other components of the net income (assets, lending and NPLs) in the absence of this policy.

4 An alternative estimate of the effect of NPLs, in line with that applied in the breakdown of net interest income presented in the Banco de España's Financial Stability report, would show this to have a less negative effect. Consequently, the current NPL-adjusted margin would be lower, although the drop would remain concentrated in the last two years (see Chart 2.21A of the May 2017 Financial Stability Report).

5 See, for example, Boyd (2008).

SPANISH DEPOSIT-TAKING INSTITUTIONS' INCOME FROM PAYMENT SERVICES AND FINANCIAL INTERMEDIATION

CHART 2



SOURCES: Banco de España and own calculations.

a Interest rate on one-day government bond repurchase agreements.
b Cumulative over four quarters.
c Margin attributable to the provision of means of payment plus fees and commissions for payment services.

rate, which implies that depositors were bearing a relatively high opportunity cost for keeping their funds in an instrument allowing them to make payments. This difference narrowed somewhat with increasing competitive pressure between deposit-taking institutions to attract deposits and savings accounts from the late 1980s onwards, although it remained significant and persisted until the sharp drop in policy interest rates began with the crisis in 2008.

Taking the interest rate on one-day repurchase agreements as the reference and considering sight deposits and savings deposits from ORSs as the sole banking liability providing payment services, an estimate can be obtained of the proportion of deposit-taking institutions' net interest income that remunerates banks for these payment services. Chart 2.2 shows the historical trend in this estimated amount (as a percentage of assets), together with total income received for payment services, including the estimated part of net interest income plus the fees and commissions for these services. Fees and commissions would therefore be the difference between these two series. The remainder of the net interest income would therefore represent payment for intermediation services.

First of all, it is worth noting the relative insignificance of the commissions for payment services. This is a reflection of Spanish financial institutions' traditional policy of obtaining the bulk of their earnings from interest income, a strategy that was even intensified in the mid-2000s, and which has only been reversed somewhat in the past two years. Thus, these fees and commissions stood at around 0.3%-0.4% of total assets in the period from 1987 to 2005, dropping to 0.13% in early 2015 and, although they have picked up somewhat in recent quarters, in December 2016 they still accounted for just 0.16%.

Secondly, Chart 2.2 shows how, more importantly, the bulk of the contraction in net interest margin (i.e. net intereset income per unit of assets) taking place over the last 25 years has been due to the reduction in the share of this income in the form of implicit charges levied for payment services. This represented 2.2% of deposit-taking institutions' total assets in 1990. It even turned slightly negative (-0.1%) in 2016. This component can be seen to follow the trend in short-term interest rates very closely.[6] By contrast, the remainder of net

interest income, which is earned on pure intermediation activity, dropped by 0.5 pp over this same period (from 1.6% to 1.1% of the balance sheet total).

The virtual disappearance of an important component of Spanish deposit-taking institutions' income in 2009 (i.e. earnings from the implicit fees charged for current and savings account payment services), could lead institutions to raise their fees or widen the spreads applied on lending interest rates and other assets in order to preserve their margins. Nevertheless, recent data seem to suggest that there may be significant competitive pressure to avoid raising charges, at least in the short-term, given the lack of a tradition of charging for payment services in this way. Moreover, it has to be borne in mind that technological innovation is already having a potentially significant impact on the financial sector, and it is not yet possible to discern clearly how this will affect the banks' competitive position with regard to the provision of this type of service. Additionally, the alternative of increasing the intermediation spread (i.e., the interest rate on lending minus the cost of borrowing not linked to payment services) may ultimately also have significant implications for this activity.

Net interest income from new business: assets and liabilities margins

The analysis in the preceding sections looked at margins on banks' asset and liability portfolio as a whole. However, from the point of view of the possible effects on demand for banking services, it is worth analysing the margins applied to new business. This section analyses how these have progressed, focusing on loans and deposits in euros with euro area residents, for which interest rate data on new business since the start of 2003 are available.

In particular, based on the Monti-Klein model,[7] frequently used for this type of analysis, it is possible to break down the net interest margin into an assets margin (average interest rates on assets less the cost of interbank funding) and a liabilities margin (the interbank rate less the average cost of liabilities). These margins depend on the elasticity of demand for loans and deposits, respectively.[8] For example, Brunnermeier and Koby (2017) recently applied a version of this model to analyse the effects of reducing policy interest rates to negative levels, such as those currently set by the ECB's deposit facility. The authors show how, theoretically, below a certain level (which will depend on the cost of substituting deposits by cash as a means of payment) it is not possible to further reduce interest on deposits, and the liabilities margin begins to contract. Given that, as a result of competition between institutions, the assets margin is optimally set as a function solely of the elasticity of demand for credit, this cannot compensate for the decline in the former, such that the total margin contracts as a result.

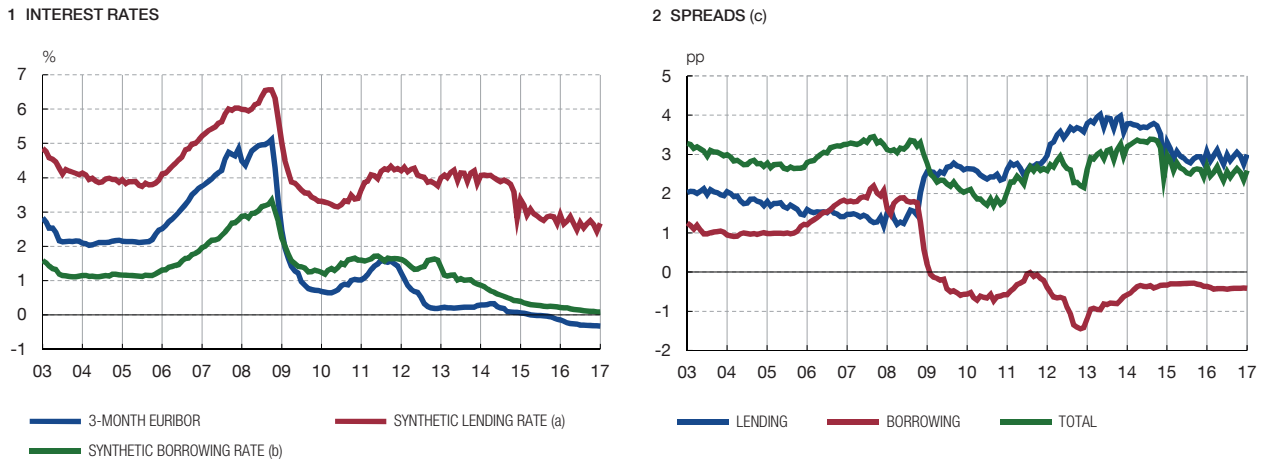
Chart 3 shows a breakdown of total net interest margin using this method for Spanish deposit-taking institutions. This breakdown suggests that, although since policy interest rates began to fall in 2008 the liability margin has effectively dropped to negative levels, the asset margin has not remained constant either. Thus, despite the drop registered in 2015 and 2016 at the end of this two-year period it was still above pre-crisis values,

6 It is not affected by the slope of the market rate curve, as it is obtained by comparing two very short-term rates.

7 See Klein (1971) and Monti (1972). A brief explanation of the model can be found in Chapter 3 of Freixas and Rochet (2008), for example.

8 According to this model, banks have a certain amount of pricing power and set interest rates on loans and deposits according to the amount of demand they experience for each. The existence of an interbank market (or bond market) to which banks resort to borrow additional funds or invest their surplus liquidity, whose prices they are unable to influence (taken as a given), means that asset and liability interest rates can be separated. Each of them is set optimally as the interbank market return plus a spread (positive in the case of lending and negative in that of deposits), which depends on the elasticity of the corresponding demand function.

SPANISH DEPOSIT-TAKING INSTITUTIONS' LENDING AND BORROWING MARGINS (NEW BUSINESS) CHART 3



SOURCE: Banco de España.

a Synthetic rate (APR) on lending to households and non-financial corporations.
b Synthetic rate on deposits by households and non-financial corporations.
c Total spread (synthetic lending rate less synthetic borrowing rate) broken down into lending spread (synthetic lending rate less three-month Euribor) plus a borrowing spread (three-month Euribor less synthetic borrowing rate).

compensating for much of the reduction in the liability margin.[9] This may be partly the result of higher risk premia on lending interest rates. Nevertheless, another factor could be institutions seeking to preserve their income in a context of extremely low interest rates. To the extent that this is the case, it could be contributing to the greater relative attractiveness of market financing among agents of sufficient size to be able to obtain this form of financing.

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9 Something similar happens in other countries, as shown by Illes et al. (2015), for example.