Box 7

MEASURING CREDIT RISK IN THE EURO AREA HOUSEHOLD SECTOR

To provide an approximation of changing patterns in the credit risk faced by the euro area household sector, this box applies a standard corporate finance model based on financial option pricing techniques. In the calculations, data from the euro area household sector's financial accounts (measured at market prices) and information on financial market volatility are used.

In applying this methodology, it is important to note that the balance sheet of the euro area household sector differs from the balance sheets of the financial and non-financial corporate sectors in several ways. First, a large share of household sector wealth is not covered by financial accounts statistics, mostly in the form of housing and other property assets. Second, the euro area household sector is characterised by a large net financial wealth position, i.e. the household sector's financial assets exceed their financial liabilities by a large margin. Households thus act as net lenders to the other sectors, most notably the government and the non-financial corporations sectors. Third, the liability side of the euro area household sector's balance sheet does not include shares or debt instruments as households do not issue financial securities. Rather, the household sector's liabilities mostly consist of short and long-term loans from banks and other financial intermediaries and smaller items such as net equity in life insurance reserves. Chart A shows the balance sheet position of the euro area household sector as at the end of the first quarter of 2009 [1] on the basis of integrated euro area accounts.

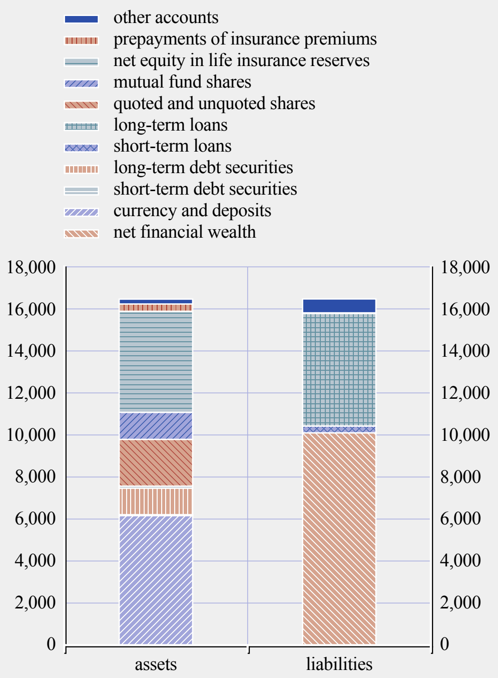
Since most measures of credit risk applied to non-financial firms (such as value at risk, distance to distress and probability of default) use outstanding traded equity and debt as input variables,

1 An important caveat with respect to the chart is that substantial differences in household sector balance sheets exist across individual euro area Member States, in particular as regards the size of the net financial wealth position.

there are no readily available market indicators for assessing household sector credit risk. To circumvent the problem that no household sector equity is issued or traded in the financial markets, the household sector's net financial wealth position (i.e. the excess of households' financial assets over their financial liabilities) was used as a measure of equity. The financial liabilities positions – mostly in the form of short and long-term loans – are then taken to represent the debt component in the calculations. Equity volatility, an additional input variable to the calculations, is represented by a measure of broad stock market volatility. The model produces, in a first step, estimates of the market value of the household sector's assets and asset volatility, which are then used in a second step to calculate a measure of distance to distress, a widely used credit risk indicator that measures the distance of the market value of assets from the book value of liabilities. The point where the two values meet is called the "distress point", where all equity is depleted and where creditors can typically take action to secure their interests. In other words, a lower reading of the distance to distress measure indicates higher credit risk. Declines in a sector's distance to distress are driven mainly by two components: higher leverage (indebtedness) and higher volatility of assets.

Chart A Euro area household sector's balance sheet

(EUR billions)



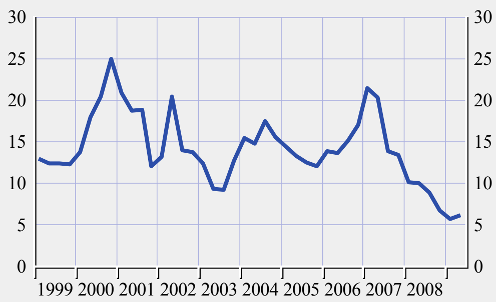
Source: ECB.
Note: Net financial wealth is defined as financial assets minus financial liabilities.

Chart B shows the quarterly evolution of the distance-to-distress indicator for the euro area household sector between the first quarter of 1999 and the first quarter of 2009. It shows that the measure declined to relatively low levels, and credit risk increased commensurately, in 2002-03, during the aftermath of the fall in stock market valuations which led to large declines in the market value of the household sector's financial assets. The measure then increased to reach a peak (illustrating low credit risk) in early 2007, right before the onset of the financial market turmoil that was triggered by the collapse of the US sub-prime mortgage market. The improvement in the outlook for credit risk in 2005-07 was driven by a sharp decline in asset volatility, which reflected the general under-pricing of risks at the time and more than offset the downward pressure on the indicator originating from the gradual increase in euro area household sector indebtedness throughout the past decade. The jump in volatility in the third quarter of 2007 then triggered a sharp decline in the distance to distress as the credit risk associated with the household sector surged. This suggests that it is also important to closely monitor the main components of credit risk indicators as abnormally low values of volatility can swing quickly when market sentiment worsens abruptly, exposing vulnerabilities that may have accumulated gradually over time.

In practice, the high credit risk associated with the household sector over the past two years has been reflected in increasing risk premia required by lenders on newly issued loans. Evidence of such behaviour can be found in the substantial tightening of lending standards applied by banks on household sector loans. Looking ahead, an increase in distance to distress and an improvement in household sector creditworthiness are expected to materialise over time, as euro area households repay their debts and reduce their financial leverage.[2]

Chart B Euro area household sector's distance to distress

(Q1 1999 – Q1 2009; number of standard deviations)



Sources: ECB, Bloomberg and ECB calculations.
Note: A lower reading of distance to distress indicates higher credit risk.

2 The indicator should be interpreted with caution. The most recent improvement in the reading of the distance to distress in Chart B is driven, to a significant extent, by abating stock market volatility.