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The Financing of Companies in Malta

Jude Darmanin[1]

Policy Note

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[1]Jude Darmanin is a Senior Economist within the Central Bank of Malta's Economics and Research Department.
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The author may be contacted at darmaninj@centralbankmalta.org

Abstract

This note examines recent developments in the financing structure of non-financial companies in Malta. The financial liabilities of NFCs are mainly composed of debt, private equity, and trade credit, with evidence pointing to a shift away from bank lending in recent years. This financial disintermediation is driven by a number of factors, including loan supply restrictions on the part of banks, the changing structure of the economy, an improvement in the financial position of NFCs, and higher usage of capital markets by large companies. In this light, the main issue is understanding whether this shift is a choice on the part of firms, or a constraint imposed by a tighter bank lending channel. The analysis in this note suggests that it is a combination of the two.

JEL Classification: E51, G00, G32.

Keywords: NFC financing, intrasectoral lending, bank credit, Malta

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Executive Summary

The funding of companies plays an important role in economic growth and resilience. The indebtedness of companies increases the economy's vulnerability to changes in interest rates and heightens credit risk, as well as hampering its ability to recover from external shocks. On the other hand, lack of funding could deter company growth, diminishing an economy's growth potential and competitiveness. Moreover, the transmission mechanism of monetary policy could be impaired in the presence of funding market inefficiencies, hampering policy response to shocks.

The financial and sovereign debt crises which hit the euro area economy over the past decade had a negative impact on financing conditions, both in Malta and abroad. In particular, new capital requirements and balance sheet consolidation brought about an overall tightening in bank credit that is still felt to the present day. Against this background, this note aims to provide an analysis of changes in the financing policy of domestic non-financial corporations (NFC). The dataset[2] spans the post-EU membership years, with analysis covering non-consolidated data[3] from the Financial Accounts database (Central Bank of Malta, 2016)[4]. In particular, the note will discuss:

- **What is the financing structure of NFCs in Malta?**
  Over the years, debt finance, particularly loans, has been the most important form of finance for resident NFCs, supported by private equity and trade credit.

- **What is the extent and cause of financial disintermediation?**
  Since the turn of the decade the composition of loans has been changing, with intrasectoral lending replacing bank credit as the main source of debt finance for NFCs. This change was predominantly pronounced in the short-term loans component. The weakness in bank lending over the years echoes developments in the euro area, and is driven by a combination of demand and supply factors. Following the fallout from the crisis, banks across the euro area tightened lending standards in an effort to boost capital ratios, with indications pointing to similar developments in Malta. Relatively high interest rates, as well as certain risks associated with the NFC sector, are other factors restraining bank credit from the

[2]The cut-off date for data in this note is 6 April 2017.
[3]Unconsolidated data does not exclude intrasectoral flows between companies.
[4]See `https://www.centralbankmalta.org/financial-accounts`

supply side. On the other hand, the demand for bank lending is restrained by the shifting structure of the economy toward less capital-intensive industries, by deleveraging pressures, and by an improvement in the financial position of NFCs, leading to the substitution of bank finance with internal funds. The latter might explain the corresponding increase in intrasectoral lending in recent years, though this should be interpreted with caution given the possibility of statistical issues.

- **Is company participation on capital markets increasing?**
  As a result of tighter bank credit, NFCs are increasingly opting for capital market financing. This is evidenced by the increased issuance of corporate bonds on the Malta Stock Exchange (MSE). However, this shift is mainly occurring among larger corporations, reflecting a number of barriers faced by smaller firms in accessing capital markets. Along with the drop in bank credit, this could suggest a funding gap for smaller enterprises, currently being filled by internally-generated funds.

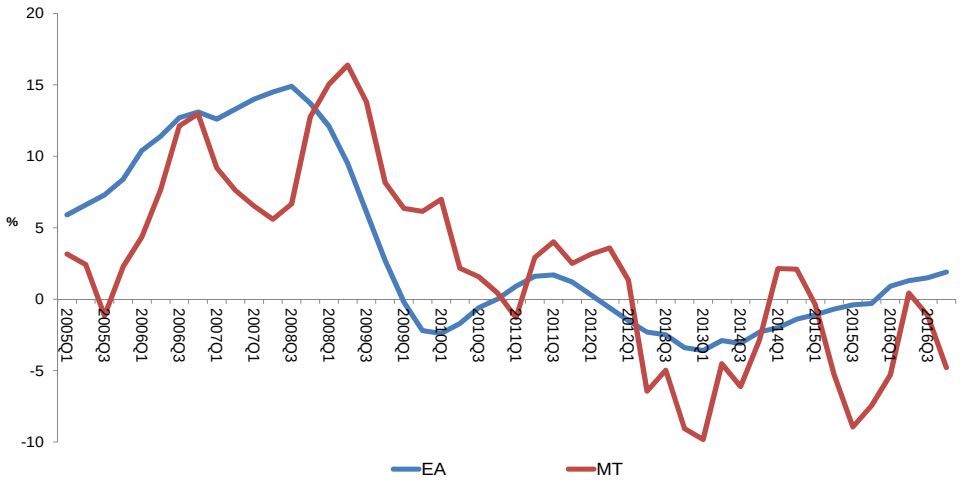
- **What are the policy implications of recent developments in NFC financing?**
  From a macroeconomic perspective, a lack of financing options for NFCs could have negative impacts on the economic potential of the Maltese economy, as well as hamper the transmission mechanism of monetary policy. From a policy perspective, the reduced reliance on bank credit could impact the pro-cyclical nature of this variable, rendering its use in the analysis of overall credit conditions redundant.

The main conclusion of this note is that the observed drop in bank credit to NFCs is being driven by increased lending restrictions on the part of banks, but also by an overall reduced need for bank finance from NFCs in light of a general shift towards less capital intensive industries. At the same time, firms are substituting bank credit by intrasectoral lending, possible due to large groups of companies taking advantage of the robust economic environment and the resulting improvement in their financial positions. Moreover, large corporations are seeking to increase their presence on capital markets. Though these developments can be viewed in a positive light in terms of the diversification of company funding sources and the overall reduced credit risk, the main issue is understanding whether this shift is a choice on the part of firms, or a constraint imposed by a tighter bank lending channel. The analysis in this note suggests that it is a combination of the two.

What is the financing structure of NFCs in Malta?

Financing conditions in the euro area were hit by the financial crisis of 2008, leading to an overall tightening of bank credit (see Chart 1). Following a mild recovery, bank lending to NFCs tightened once more as the sovereign debt crisis took hold in 2012, with the subsequent contraction lasting almost four years. These events prompted the European Central Bank (ECB) to lower its key interest rates on a number of occasions, as well as to introduce a number of non-standard measures in an attempt to ease the financing conditions faced by private firms. More recently, lending to NFCs in the euro area has shown some signs of recovery; on the other hand, growth in lending to NFCs in Malta remained in negative territory by the end of 2016.

Chart 1
MFI LOANS TO RESIDENT NFCs
(year-on-year growth of end-quarter stocks)

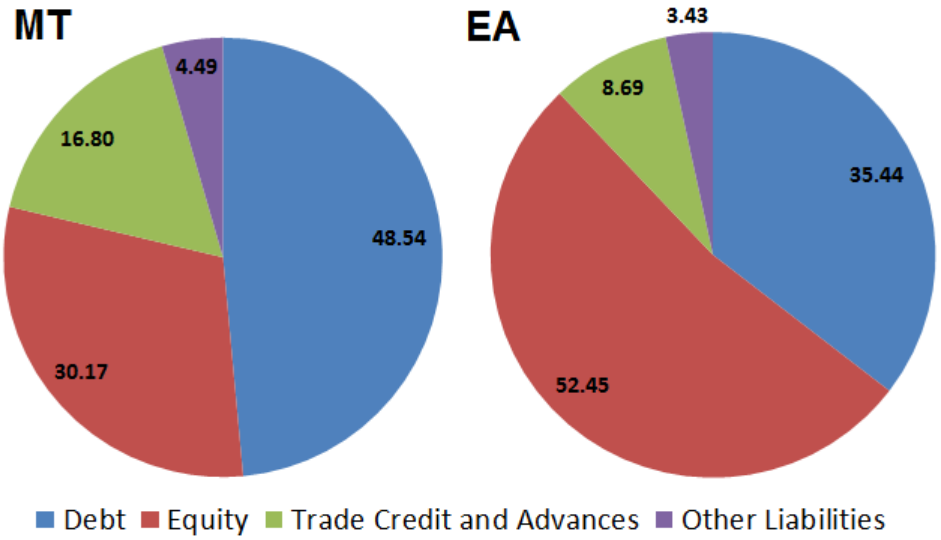


Source: ECB.

Chart 2 shows the the financial liability structure of NFCs in Malta, compared with that of euro area NFCs, as at 2016. From the figure, it is clear that the main sources of company funding in Malta and in the bloc can be split into three main categories, namely debt, equity, and trade credit. While in Malta debt (loans and securities) is the main component of NFC liabilities, followed by equity, in the euro area it is equity that forms the main source of NFC financing. This suggests a higher debt/equity ratio in Malta than the euro area average, which could increase resident companies' exposure to events such as an interest rate shock. At the same time, Chart 2 also indicates a more widespread use of trade credit and advances in Malta when compared to the euro area. Other liabilities, such as insurance, pension and standardised

guarantees, financial derivatives, and employee stock options, form only a small share of NFC liabilities, in both Malta and in the euro area.

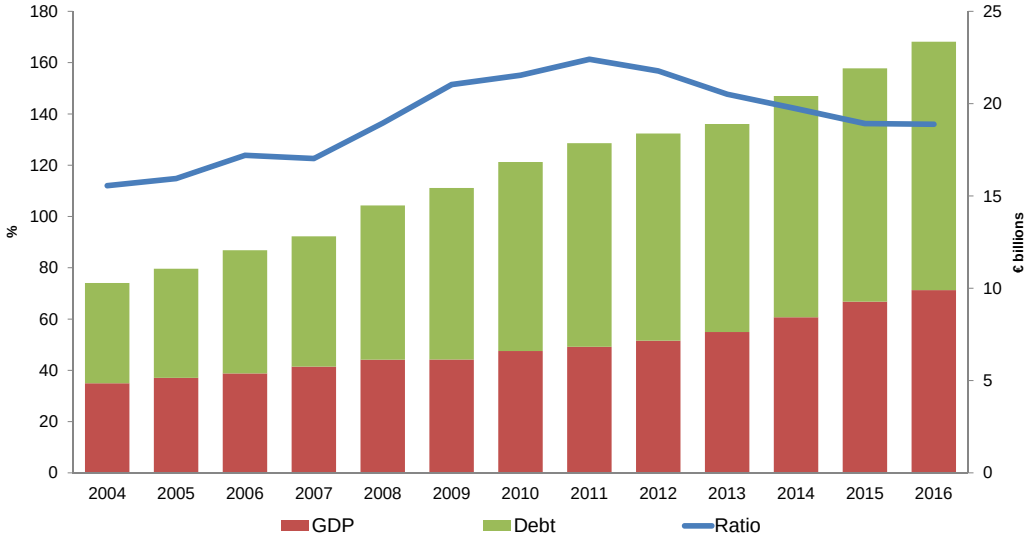
Chart 2
COMPOSITION OF NFC FINANCIAL LIABILITIES
(end-2016 stocks at market prices)



Source: Financial Accounts.

Since the start of the Financial Accounts dataset in 2004, **debt** (non-consolidated) has been recorded as the largest source of NFC financing in Malta, standing at EUR13.5 billion in 2016 (48.5% of total financial liabilities). As a ratio of nominal Gross Domestic Product (GDP), this amounts to 136.0% (see Chart 3), down from a peak of 161.3% in 2011. This reversal of trend following the crisis years in Europe in part reflects an overall tightening of bank credit in response to the increased emphasis on financial prudence. Indeed, while GDP growth has picked-up strongly in recent years, growth in debt failed to recover to its pre-crisis levels, averaging 4.7% since 2011 when compared with 11.2% in the previous six year period. Nonetheless, the NFC debt-GDP ratio remains higher than in the euro area, where the comparable figure stood at 104.2% in 2016.

Chart 3
NFC DEBT/GDP RATIO
(end-of-year stocks at market prices)

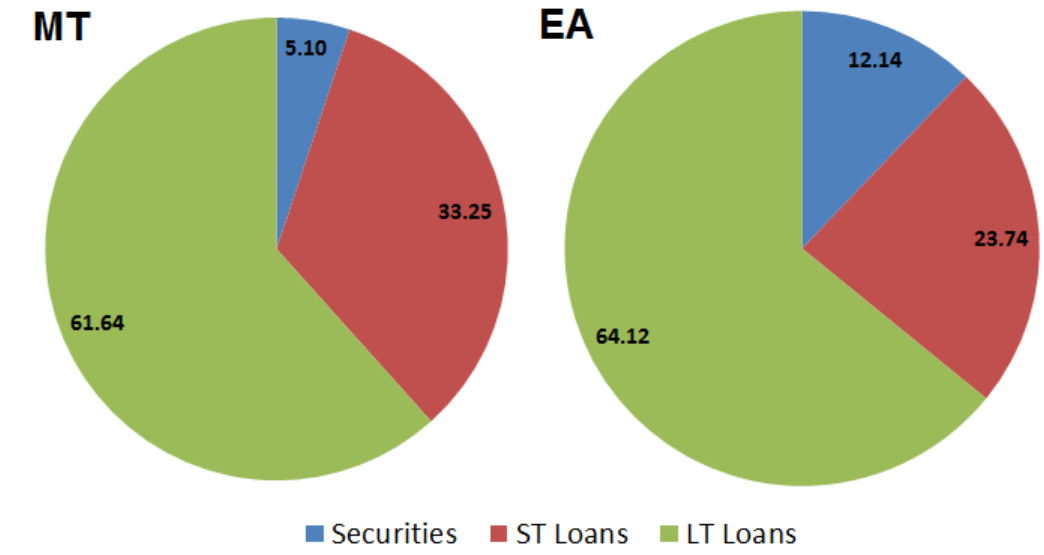


Source: Financial Accounts; Eurostat.

The composition of debt in Malta remains heavily skewed towards lending, particularly long-term loans (see Chart 4). As at 2016, 94.9% of NFC debt outstanding was in the form of loans, with 5.1% issued as debt securities[5]. In the euro area, 12.1% of NFC debt is issued as securities, with the rest held in the form of loans. This could indicate a lower use of capital markets for financing purposes in Malta when compared to the bloc.

[5]The amount of NFC debt securities may be understated in the Financial Accounts dataset as a number of resident companies issue securities through financial subsidiaries, which are classified as Other Financial Institutions rather than as NFCs. Estimates suggest that, after including these securities, debt securities owed by NFCs amount to between 9% to 10% of debt in 2016 (see Chart 9 below for author's calculations).

Chart 4
COMPOSITION OF NFC DEBT
(end-2016 stocks at market prices)



Source: Financial Accounts.

Apart from debt, **equity** has been the most important source of NFC funding over the years, standing at 30.2% of total liabilities in 2016 (see Chart 2). Unlisted shares make up the bulk of equity issued by resident NFCs, accounting for 79.0% of total equity, with listed shares accounting for the remaining 21.0%; this compares with a share of 31.9% for listed equity in the euro area. Again, this is a further indication of a lower use of capital markets in Malta when compared to the bloc. This preference for private equity over publicly listed equity could relate to certain barriers faced by small companies when listing on public exchanges. On the other hand, the high proportion of family businesses in Malta could lead to a lack of interest in seeking outside ownership, with patrons preferring to keep business ownership within the family.

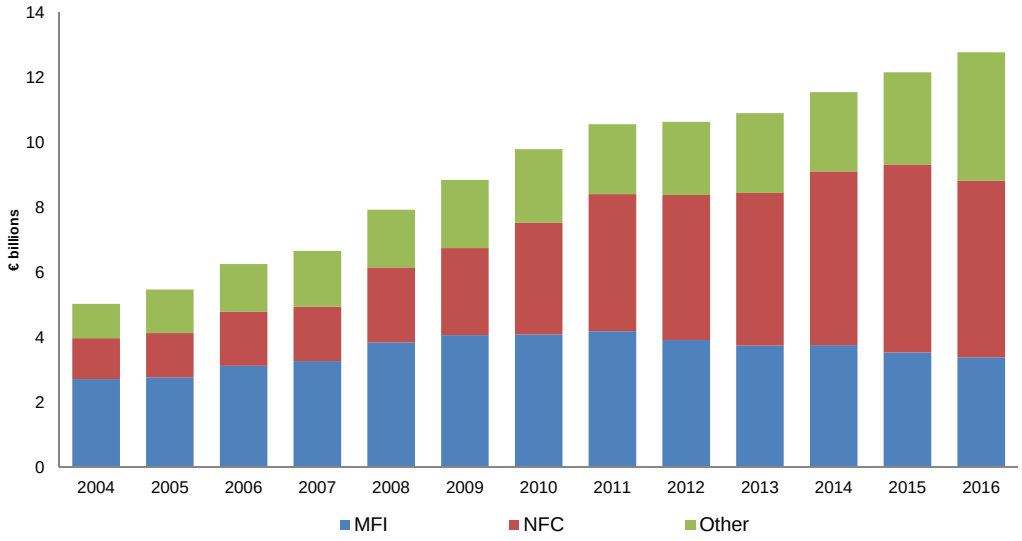
The other major component of NFC financial liabilities is **trade credit and advances**. The share of this component has grown gradually over the years, from 14.9% in 2004 to 16.8% in 2016 (see Chart 2). An increase in the use of trade credit could reflect the need for a buffer against falling bank credit, with the European Central Bank (2011) analysing the case of the euro area. Indeed, use of trade credit in Malta has been proportionately higher than in the bloc, where trade credit and advances make up 8.7% of NFC liabilities. One reason could be that the small size of the Maltese economy makes it easier for relationships to form between buyers and suppliers, who support each other during periods of tight finance.

What is the extent and cause of financial disintermediation?

Financial disintermediation occurs when borrowers opt to bypass the middleman, mainly banks, when obtaining funds and instead borrow directly from lenders, such as through capital markets. In light of the recent slowdown in bank credit (see Chart 1), this section analyses whether financial disintermediation is taking place in Malta, as it has been in a number of euro area economies (Brutscher, 2014), (European Central Bank, 2014).

Since 2004, loans have provided the main form of debt finance to businesses resident in Malta (see Chart 4). Chart 5 shows the total stock of loans owed by resident NFCs, classified by source. Over the years, loans granted to NFCs have mainly been obtained from monetary and financial institutions (MFI) and from other NFCs. Other sources of loan finance mainly include loans from Rest of World (ROW).

Chart 5
LOANS TO NFCs BY SOURCE
(end-of-year stocks)



Source: Financial Accounts.

During the years following EU membership in 2004, MFIs, namely banks, constituted the main share of NFC loan financing, with annual growth averaging 7.2% during the period 2005-2010. This trend was reversed following the fallout from the the crisis in Europe, with annual growth

in MFI loans to NFCs averaging -3.0% during 2011-2016[6]. By 2016, the share of MFI loans in total NFC loans had dropped to 26.5%, from 50.5% in 2005. A study by Micallef (2015) concluded that a credit gap in bank funding to Maltese NFCs emerged in 2012 and widened substantially in 2013 and 2014 to around 15%-18%. It was suggested that the decline in bank credit was a combination of both demand and supply side factors, and a gradual shift in banks' loan portfolios from NFCs to households.

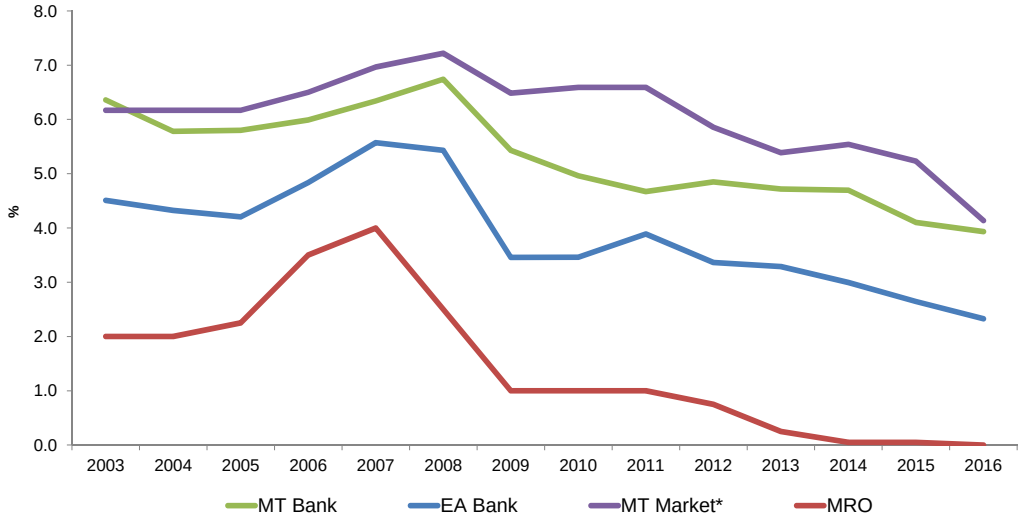
At the same time, the share of loans generating from other NFCs has increased, from 25.0% in 2005 to 42.6% in 2016. This points to an increased reliance from companies on intrasectoral lending during a period when bank finance was weakening, with the European Central Bank (2014) estimating the share of NFC-NFC loans in Malta to be one of the largest in the euro area.

Other loan sources could include loans from households and other financial institutions, though the bulk of the "other" category is generally comprised of loans from ROW. These mainly reflect loans granted to foreign-owned resident NFCs, either from foreign banks or from their parent companies resident abroad (trans-border intrasectoral lending).

In part, the recent shift away from bank loans could be explained by supply side restrictions on the part of banks. Chart 6 compares the interest rate on NFC loans charged by banks in Malta and in the euro area, along with an estimated capital market interest rate for Maltese NFCs[7]. Since 2007, when the ECB began its first wave of cuts to its main refinancing operations (MRO) rate, interest rates on outstanding NFC loans fell by 241 basis points (as at end-2016), while the comparable rate in the euro area dropped by 325 basis points. As a result, given that euro area interest rates were already lower than rates in Malta, the spread between the two widened further, standing at 161 basis points at the end of 2016. Indeed, Micallef et al. (2016) concluded that the estimated pass-through of ECB policy rates to NFC lending rates in Malta was one of the lowest in the euro area.

[6] Growth in bank loans to NFCs during this period was also impacted by the reclassification of some loans owed by public NFCs to the financial sector.
[7] See Appendix A.

Chart 6
INTEREST RATES CHARGED TO NFCs
*(end-of-year annualised agreed rate on outstanding amounts; *weighted average based on new issues per period)*



Sources: ECB; MSE; CBM calculations.

Moreover, the fallout from the crisis in Europe has led to increased efforts on the part of euro area banks to boost capital ratios, which in part has been achieved through a cutback in NFC loans (Bending et al., 2014). In Malta, results from the European Commission's 2016 SAFE survey of small and medium-sized enterprises (SME) (European Commission, 2016) indicate that the terms and conditions offered by banks on loans had somewhat deteriorated since 2013. Furthermore, a recent European Commission report on Malta in 2014 quoted *"lending standards were tightened significantly in response to the crisis, particularly for the construction sector, and have remained largely unchanged since then"* (European Commission, 2014).

Although the financial soundness indicators of core domestic banks remain stable (Central Bank of Malta, 2016), bank lending data indicates that a shift is taking place in banks' portfolios towards household loans, particularly mortgages. This might reflect a lower risk associated with household loans due to the tangibility of collateral and a lower ratio of non-performing loans, as well as the above-mentioned higher debt/equity ratio of Maltese firms. At the same time, high leverage in some industries is reducing the credit-worthiness of firms, acting as a deterrent to bank lending. Added to this is the introduction of new sectors into the Maltese economy, to which banks might exercise increased caution in the granting of loans. Other factors could include the inability of small firms to provide adequate collateral, inefficiencies due to a lack of competition in the domestic banking market, and banks looking to reduce their exposures to

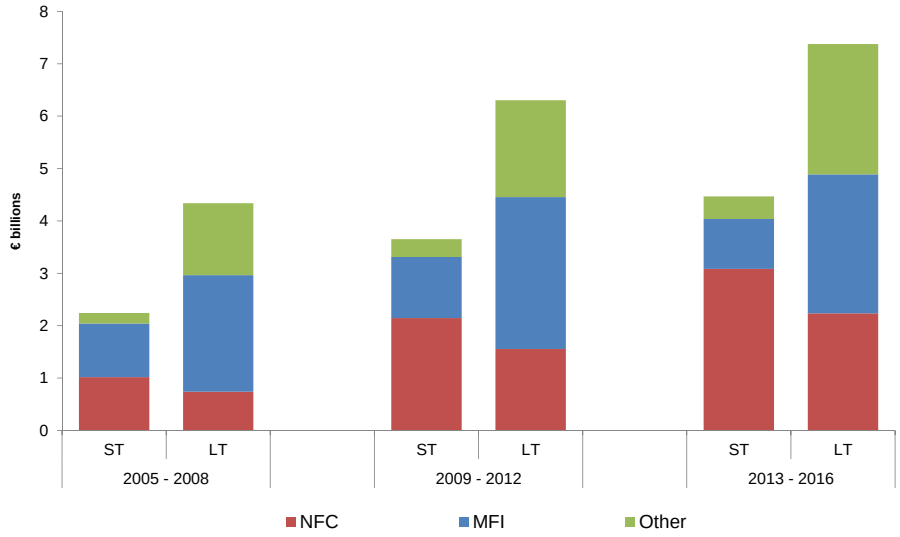
industries such as construction.

On the demand side, recent company surveys such as SAFE indicate a growing number of firms not applying for bank loans due to sufficient internal funds (European Commission, 2016). This is in line with the increased turnover implied by a growing economy, with investment projects financed internally or through parent companies. Similarly, the expansionary cycle of the economy allows firms in the construction industry to sell properties on-plan, thus giving them sufficient internal funds to undergo large investment projects without the need for bank financing.

This drop in demand for bank loans due to growth in internal funds could also explain the increased share of intrasectoral lending in recent years. Given a sufficient amount of internal funds, a company would find it cheaper and less bureaucratic to borrow from within the company group rather than from an intermediary with tightened lending standards.

In particular, Chart 7 shows that the increased share of intrasectoral loans is mainly driven by developments in short-term loans (less than one year), with banks remaining the main source of long-term loans. This could relate to bank overdraft facilities and credit lines, which SAFE surveys show is one of the largest sources of finance for Maltese SMEs (Central Bank of Malta, 2016). This could relate either to tighter lending restrictions on the part of banks, or else to increased use of internal group funding in light of improvements in economic performance and turnover, given that these loans tend to be in smaller amounts.

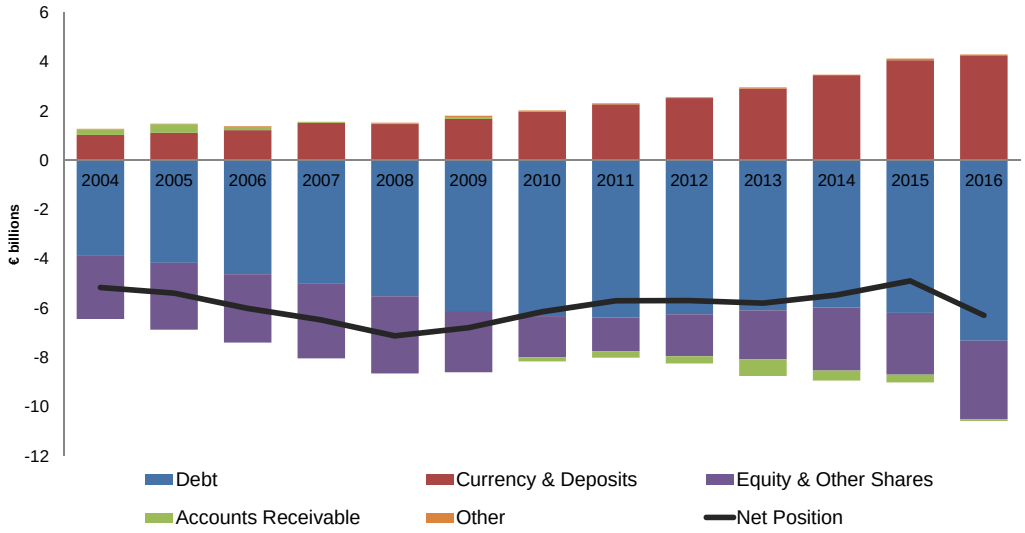
Chart 7
LOANS TO NFCs BY SOURCE AND MATURITY
(period average end-of-year stocks)



Source: Financial Accounts.

Chart 8 depicts the net financial position of resident NFCs. Since 2008, the net financial position has gradually improved (with the exception of 2016, due to developments in loans from ROW), driven by strong growth in currency and deposits. This data supports the idea that the rise in intrasectoral lending was in part driven by an increase in the internal funds of large groups of companies, used as an alternative to the diminishing supply of bank credit (European Commission, 2017).

Chart 8
NET FINANCIAL POSITION OF RESIDENT NFCs
(end-of-year net stocks)



Source: Financial Accounts.

Another factor that could be driving the shift away from bank loans is the changing structure of the Maltese economy, which has moved towards more labour-intensive industries such as financial services, gaming, and information technology. In 2014, a European Commission report stated that *"(the) structural shift in the (Maltese) economy to some extent lowers the capital intensity of the economy, resulting in lower need for investment, thus also lowering the demand for credit"* (European Commission, 2014). Indeed, Malta's investment-to-GDP ratio has gradually dropped over the years, from 20.6% in 2004 to 17.2% in 2014[8], which would in turn imply a drop in the demand for bank credit. Deleveraging pressures on industries such as construction might also be weighing on the demand for loans (Bending et al., 2014).

While the drop in bank credit and the corresponding shift to intrasectoral lending can be explained by the relevant demand and supply factors, it should be noted that intrasectoral lending could in part be artificially driven by statistical issues (Hertkorn, 2015). Movements in funds for internal accounting purposes, as well as estimation errors, particularly when countries do not have complete coverage of NFC balance sheets in their statistical sources, could inflate the level of intrasectoral lending. Furthermore, the high level of disaggregation within the financial accounts dataset means that large companies and their financing arms are often recorded as

[8]The investment-to-GDP ratio had risen once more to 23.4% by 2016, though this was mainly due to large government-induced investment projects.

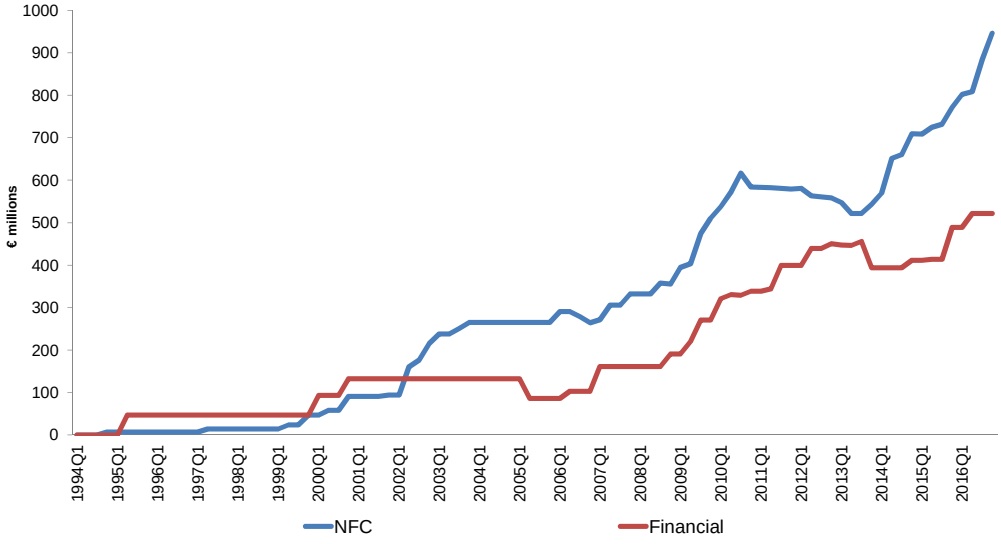
separate NFCs, and thus movements of funds from one to the other are artificially recorded as an increase in loans.

Is company participation on capital markets increasing?

In light of the supply constraints faced by firms in obtaining bank loans, one might expect firms to meet their demand for funds through increased issuance on capital markets, particularly debt securities or equity.

As shown in Chart 4, the share of securities in the total debt financing of resident NFCs is small and lower than in the euro area. Nonetheless, issuance of debt securities is rising. Chart 9 depicts the amount of publicly-issued corporate debt securities outstanding on the Malta Stock Exchange (MSE). By 2016, close to a nominal value of EUR2 billion worth of corporate securities had been issued on the exchange since its opening in 1992, with over three-quarters of this sum issued since 2009. Data from the MSE also suggests that since 2009 a number of firms issued debt on the capital market for the first time. When excluding redemptions and deductions, the total net amount of publicly issued corporate securities outstanding at the end of 2016 stood at EUR1.5 billion, of which EUR946.4 million were owed by NFCs. The average maturity of debt[9] also rose, going from 7.4 years in 2005-2008 to 9.0 in 2009-2012, and then to 9.2 during the period 2013-2016.

Chart 9
CORPORATE SECURITIES LISTED ON MSE
(units outstanding as at end-period)



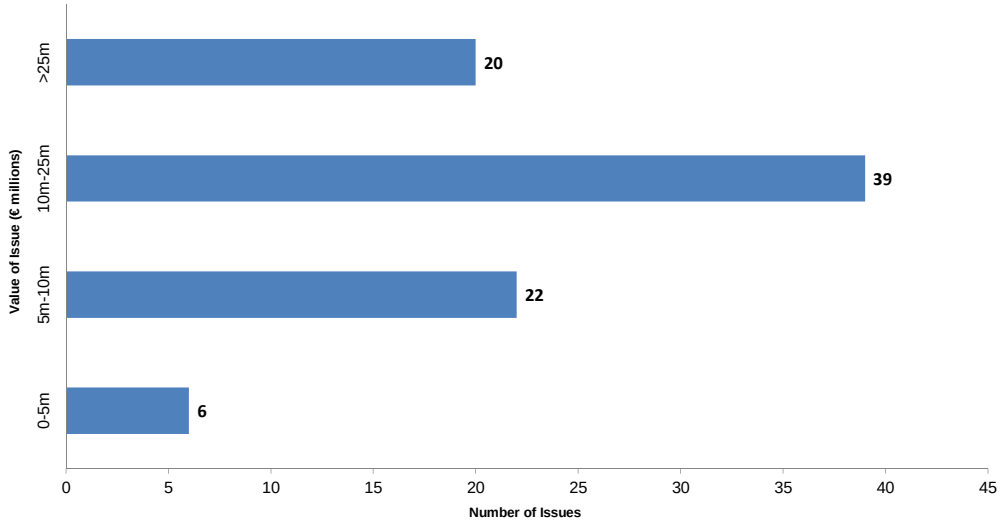
Sources: MSE; CBM estimates.

[9]The length to maturity of a bond is calculated using the latest possible maturity as at the issue date.

This suggests that the decline in bank credit has somewhat prompted increased debt issuance on the capital market, particularly since 2009. Furthermore, an increase in investment demand from households, driven by an increase in their net financial wealth (Central Bank of Malta, 2016) and a search for yield in a low interest rate environment, could be motivating more firms to issue debt securities by creating a more liquid capital market.

Nonetheless, a closer look at the figures suggests that issuance of corporate securities remains limited to a few large companies. Indeed, since 1992, only 40 different companies have issued securities on the MSE, of which 34 were NFCs. Moreover, as shown in Chart 10, only six issues, out of a total of 87 new NFC bond issues, were for an amount of less than or equal to EUR5 million, while supplementary data suggests that the number of resident firms seeking finance in foreign exchanges is low. Similarly, with regard to the equity market, by the end of 2016 just 27 different companies had floated shares on the MSE since its founding, of which 22 were resident NFCs. This all points to the conclusion that although capital market issuance has increased since 2009, this is mainly limited to a few large companies.

Chart 10
NEW ISSUES OF NFC SECURITIES
(as at end-2016; number of issues per range, upper limit inclusive)



Sources: MSE; CBM estimates.

Financial disintermediation has mainly been observed in euro area countries with well-developed capital markets, with the extent of disintermediation in countries with smaller capital markets much more limited (Brutscher, 2014). When listing on capital markets NFCs face a number of restrictions, including the need for a prospectus, minimum share capital and market value

requirements, small scale, and a high risk premium due to asymmetric information. The latter is evidenced by Chart 6 above, which shows that since 2007, the synthetic capital market interest rate dropped by 268 basis points. Although this is slightly more than the drop of 241 basis points in the bank lending rate to NFCs, it continues to point to a sluggish pass-through from the Eurosystem's accommodative monetary policy to the cost of funding in Malta, from both banks and capital markets (although one reason for this could be that a number of corporate bonds are unsecured).

Nonetheless, it is telling that despite this relatively high market rate, large corporations are increasingly seeking to obtain funds to through bond issuance, which indicate the presence of non-interest rate related lending restrictions on the part of banks. At the same time, bond markets could offer certain advantages over bank finance, such as generally longer maturities, a quicker process for obtaining funds, and the possibility of automatic rollovers.

What are the policy implications of recent developments in NFC financing?

The financing of companies plays a key role in shaping the growth cycles of the economy, fuelling the investment required for sustainable economic growth. At the same time, corporate investment tends to be the most vulnerable component of economic growth, usually involving large capital outlays and a fair amount of uncertainty. This makes it all the more important for policy-makers and regulators to understand and support the financing structure of companies.

The implication of the above analysis is that Malta's resistance to future economic shocks could be hampered if small enterprises, which comprise the large majority of resident businesses, are not in a position to obtain funding from financial sources. This is especially so in the eventuality of a drop in internal funds as the economy moves away from its current expansionary cycle. At the same time, a shift away from bank credit will lead to an impairment of the transmission mechanism of monetary policy, which mainly occurs through the banking channel. Lack of funding could make expansion difficult for companies, harming Malta's potential growth in the future.

A further implication relates to the use of bank credit as an indicator of financial and credit conditions in financial stability policy. For example, the Central Bank of Malta's countercyclical capital buffer (CCB), which is one of the Bank's main macro-prudential tools for ensuring financial stability[10], uses credit as one of its indicators of credit conditions. If the structure of firms' financing has shifted away from bank lending, as is implied by the above analysis, this could impact the pro-cyclical nature of bank credit, thereby reducing the effectiveness of this variable as an indicator of financial stability.

In order to address the issues faced by firms in obtaining bank credit, a number of initiatives are currently being undertaken by the financial authorities. The Malta Development Bank Bill[11], presented to parliament in 2016, is aimed at creating a Development Bank to address the gaps and failures in the domestic financial infrastructure, with particular attention given to SMEs. The bank will mainly operate when private commercial banks fail to make appropriate financing

[10] See `https://www.centralbankmalta.org/countercyclical-capital-buffer`
[11] See Malta Development Bank Act, available at `www.justiceservices.gov.mt`

available, or if financing is not being offered at normal market rates. Meanwhile, in 2017 the MSE launched the National Capital Markets Strategic Plan, proposing a number of initiatives as part of its long-term strategy to develop a liquid and efficient securities market. The MSE is also in the process of launching Prospects, an exchange geared towards SMEs, giving them access to capital markets without need for collateral or minimum issue requirements[12]. These developments, along with other government and EU initiatives, are an important step towards addressing the concerns arising from the lack of bank credit, as well as increasing the funding mix of small firms.

[12]See `www.smeprospects.com`

References

Bending, Tim, Markus Berndt, Frank Betz, Philippe Brutscher, Oskar Nelvin, Debora Revoltella, Tomas Slacik, and Marcin Wolski (2014), "Unlocking Lending in Europe." Technical report, Regional Studies and Roundtables, European Investment Bank (EIB).

Brutscher, P (2014), "The Impact of Financial System Differences within Europe on Financial Resilience." In *Unlocking Lending in Europe, Box III (European Investment Bank, 2014)*.

Central Bank of Malta (2016), "Interim Financial Stability Report."

Central Bank of Malta (2016), "Sectoral Financial Linkages Using Malta's Financial Accounts." *Annual Report 2016*, pp. 30–35.

Central Bank of Malta (2016), "Survey on Access to Finance (SAFE) in 2015." *Quarterly Review 2016:1*, pp. 80–88.

European Central Bank (2011), "The Use of Trade Credit by Euro Area Non-Financial Corporations." *Monthly Bulletin*, April 2011, pp. 24.

European Central Bank (2014), "Deleveraging Patterns in the Euro Area Corporate Sector." *Monthly Bulletin*, February 2014, pp. 97.

European Commission (2014), "Macroeconomic Imbalances Report - Malta." URL `http://ec.europa.eu/economy_finance/publications/occasional_paper/2014/pdf/ocp184_en.pdf`.

European Commission (2016), "Survey on the Access to Finance of Enterprises." URL `http://ec.europa.eu/growth/access-to-finance/data-surveys_mt`.

European Commission (2017), "Country Report - Malta." URL `https://ec.europa.eu/info/sites/info/files/2017-european-semester-country-report-malta-en.pdf`.

Hertkorn, A (2015), "Consolidated and non-consolidated debt measures of non-financial corporations." In *IFC Bulletin No. 39*.

Micallef, Brian (2015), "Estimating a Credit Gap for Non-Financial Corporations in Malta." *Central Bank of Malta*, WP/04/2015.

Micallef, Brian, Noel Rapa, and Tiziana Marie Gauci (2016), "The Role of Asymmetries and Banking Sector Indicators in the Interest Rate Pass-Through in Malta." *Journal of Advanced Studies in Finance*, Vol. 7, 1(13), pp. 5.

Appendices

Calculating the synthetic capital market rate

The synthetic capital market rate is calculated as the weighted sum of the coupon rate offered on bonds issued on the MSE in a particular year. Equations 1 and 2 below illustrate this process.

$$R_t = \Sigma_{t=T}^{j}[W_j(I_j)] \tag{1}$$

$$W_j = n_j/N_t \tag{2}$$

For each year (t), up until the end of sample (T), the total amount of new issues (N) of corporate bonds on the MSE is calculated. The weight (W) of each bond (j) is calculated as the ratio of the nominal issue amount of each bond in euro terms (n) to the total amount of new issues in that particular year. The weighted coupon rate of each bond is then calculated as the coupon rate (I) of that bond multiplied by its weight. For each year, the synthetic capital market rate (R) is the sum of the weighted coupon rates of those bonds issued in that particular year.