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Incentivising Lending to SMEs with the Funding for Lending Scheme: Some Evidence from Bank-level Data in the United Kingdom

Olena Havrylchyk

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By Olena Havrylchyk

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ABSTRACT/RÉSUMÉ

Incentivising lending to SMEs with the Funding for Lending Scheme: some evidence from bank-level data in the United Kingdom

This study explores the effectiveness of the incentive mechanisms embedded within the UK's Funding for Lending Scheme (FLS) for banks' to expand their supply of lending to medium sized enterprises (SMEs). The FLS was announced by the Bank of England and HM Treasury in June 2012, with the aim of improving the supply of credit to the UK real economy. Despite the prevailing low level of risk-free interest rates, UK banks' funding costs were elevated at the time of the Scheme's introduction, and the intention was to provide lenders with a stable source of lower-cost funding to support credit provision to the real economy. The Scheme's design built in direct incentives for banks to support lending to the real economy, by linking both the price and quantity of funding available through the Scheme to their lending performance. This paper looks for evidence of the effectiveness of these incentives, exploiting a modification of the Scheme's design for its extension in April 2013 to help identify changes in credit supply from credit demand. Specifically, the change sharpened incentives to lend to SMEs, relative to larger ones. This facilitates using a difference-in-difference approach, exploiting bank-level data on UK banking groups, to look for a direct impact of incentives on credit supply, considering larger companies as a control group. On the basis of the available dataset, it is not possible to identify that this change in the incentive structure of the FLS directly boosted loan growth to SMEs, relative to large firms, between the extension of the Scheme and the end of 2013. The results seem robust to using different metrics of credit supply. However, the dataset is unavoidably small, both in terms of number of lenders covered and the length of the period after the modification of the design. More generally, reductions in lenders' market funding costs since the FLS' introduction may have lessened banks' incentives to use draw on the Scheme, and so the impact of incentives within it.

JEL classification codes: G21; G28; E51

Keywords: SME lending, banks, unconventional monetary policy, monetary transmission.

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Les mécanismes d'incitation au crédit aux PME dans le *Funding for Lending Scheme* – effet constaté à partir des données au niveau des banques au Royaume-Uni

La présente étude examine l'effet des mécanismes d'incitation rassemblés dans le Funding for Lending Scheme (FLS) sur l'évolution des volumes de prêt des banques aux petites et moyennes entreprises (PME) britanniques. Le FLS a été lancé en juin 2012 par la Banque d'Angleterre et le Trésor britannique dans le but d'améliorer l'offre de crédit pour l'économie réelle au Royaume-Uni. Malgré le niveau généralement bas des taux d'intérêt sans risque à l'époque, les banques britanniques faisaient face à des coûts de financement élevés au moment de la mise en place du dispositif, et l'intention était d'ouvrir aux établissements prêteurs une source stable de financement à meilleur marché pour appuyer la fourniture de crédit à l'économie réelle. La conception du FLS intégrait des mécanismes directs d'incitation à soutenir l'économie réelle, qui liaient le prix et la quantité des ressources mises à la disposition des établissements aux volumes de prêts consentis par ces derniers. Cette étude vise à trouver des preuves de l'effet de ces mesures d'incitation, en s'attachant en particulier à leur impact après la redéfinition et l'extension du dispositif en avril 2013 pour mettre en évidence les évolutions de l'offre de crédit liées à la demande de crédit. La modification du dispositif intensifiait spécifiquement l'incitation à prêter aux PME par opposition aux grandes entreprises. Cette réorientation facilite l'utilisation d'une méthode d'estimation par différences de différences et la recherche, à partir des données par établissement pour les groupes bancaires britanniques, d'un effet direct des incitations sur l'offre de crédit, les grandes entreprises étant prises comme groupe de contrôle. L'ensemble de données disponible ne permet pas de déterminer que ce changement dans la structure des incitations du FLS a directement renforcé la croissance des prêts aux PME par rapport aux prêts aux grandes entreprises entre le moment de l'extension du dispositif et la fin de 2013. Ces résultats ne semblent pas varier même lorsque l'on utilise d'autres mesures de l'offre de crédit. Cependant, la série de données est inévitablement petite, tant par le nombre de prêteurs couverts que par la période examinée, après la réorientation ; et, plus généralement, la baisse répétée des coûts de financement sur le marché pour les prêteurs depuis la mise en place du FLS a pu amoindrir l'intérêt d'un recours au dispositif pour les banques et, partant, l'impact des mécanismes d'incitation qu'il contenait.

Classification JEL: G21; G28; E51

Mots clef: Prêts aux PME, banques, politique monétaire non conventionnelle, transmission monétaire.

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INCENTIVISING LENDING TO SMES WITH THE FUNDING-FOR-LENDING SCHEME: SOME EVIDENCE FROM BANK-LEVEL DATA IN THE UNITED KINGDOM

By Olena Havrylchyk[1]

Introduction

In response to the financial crisis and its aftermath, the UK authorities implemented a number of non-conventional policy measures intended to help support the economy. A notable example of this was the Funding for Lending scheme (FLS), which was launched by the Bank of England (BoE) and HM Treasury in June 2012, at a time when UK banks' funding costs were especially elevated in light of developments in the Euro area. [2] The FLS was intended to provide banks[3] with a stable source of term funding at rates well below those prevailing in the market at that time. Shortly after the introduction of the Scheme, UK banks' market funding costs fell markedly. These falls may in part have reflected the fact that the Scheme introduced an alternative, non-market source of funding, together with any perceived reduction in the perceived riskiness of UK banks associated with this. However, it is difficult to assess the relative importance for the reduction in market funding spreads over the second half of 2012 of the introduction of the FLS and of events in the Euro area (notably President Draghi's 'whatever it takes' remarks) that lowered credit spreads across a range of financial markets, both in the euro area and beyond, including in the UK.

This study does not attempt to explore the reasons for the reduction in funding costs following the introduction of the FLS. Rather it explores the effectiveness of the direct incentive mechanisms which were embedded in the design of the Scheme, through linking both the price and quantity of this funding to an individual bank's lending to the UK real economy. In particular, it exploits a modification in the design of the Scheme when it was extended in April 2013, with the intention of further sharpening banks' incentives to lend to SMEs, to look for evidence that this change boosted the provision of lending to the SME sector.

The initial design of the FLS was such that banks gained access to an additional GBP 1 of funding through the Scheme for every additional GBP 1 of lending to households or companies, irrespective of company size. The extension of the Scheme in April 2013 introduced an additional funding allowance of GDP 10 for every extra GBP 1 of new net lending to SMEs that took place between 2013 Q2 and the end of that year, while leaving the incentives to lend to households and larger companies

1. The study was undertaken during Olena Havrylchyk's research stay at the Bank of England (University of Lille, e-mail: olena.havrylchyk@univ-lille1.fr). Olena is grateful to George Murphy (Bank of England) for excellent research assistance, Matthew Trott (Bank of England) for the numerous comments on the initial draft of the paper, as well as to Pierre Beynet (OECD Economics Department), Rohan Churm (Bank of England), Boris Cournède (OECD Economics Department), Rafal Kierzenkowski (OECD Economics Department), Caroline Roulet (OECD Directorate for Financial and Enterprise Affairs), Sally Srinivasan (Bank of England), Richard Whisker (Bank of England) and Garry Young (Bank of England), for useful discussions and suggestions.

2. Other non-conventional monetary policy measures, such as quantitative easing (QE), were studied by Butt et al. (2014) and Joyce et al. (2011). The aim of QE was to lower longer-term interest rates so as to stimulate aggregate demand and ensure the outlook for inflation remained consistent with the MPC's target. Importantly, QE was thought to work in part by increasing the price and issuance of risky assets, stimulating demand even if bank lending conditions facing the UK real economy did not improve. In contrast, the intention of the FLS was to help facilitate the pass-through of the low levels of risk-free rates into bank lending conditions facing the real economy. The FLS was therefore complementary to QE: the former aimed to facilitate monetary transmission through the banking sector; the latter could work primarily through other non-bank, channels.

3. The Scheme targeted not only banks, but also other financial institutions such as building societies. However, for reasons of simplicity, we refer to all these institutions as banks or FLS participants.

unchanged. There is no reason to expect this change to have differentially affected the demand for credit from companies of different sizes. This enables us using a difference-in-difference approach, considering large companies as a control group, to investigate a direct impact of the sharper lending incentives introduced in April 2013 on credit supply to SMEs. This study also investigates whether movements in loan growth around this modification of the Scheme depend upon bank characteristics (e.g. size, capitalization, liquidity, asset quality and banks' business models), which might contain relevant insights about monetary transmission.

The analysis is possible thanks to bank-level data of the BoE on net lending, which is disaggregated by lending to SMEs and to large firms. Moreover, the data provide information on individual bank perceptions about credit demand and supply conditions taken from the *Credit Conditions Survey*.

This study appears to be the first one to look for evidence on the effectiveness of direct incentives for banks by linking the terms of the provision of funding by a central bank to lending performance, in this case in particular to SMEs. The paper contributes to the rapidly growing literature on unconventional monetary policies that have been undertaken after the global crisis. The analysis of the FLS is particularly important, because other central banks have subsequently introduced schemes with a number of similar properties to the FLS, such as Targeted Longer-Term Refinancing Operation (TLTRO) announced by the ECB in June 2014. The paper also adds to the literature on the SME financing.

We detect no statistically significant effect of much sharper incentives introduced within FLS in April 2013 on credit supply to SMEs relative to large companies. The results are robust to the use of several alternative metrics of loan supply, such as loan growth, banks' perceptions of credit availability, share of approved loans, fees and spreads, as well as collateral requirements.

The structure of the paper is as follows. In Section 2, the design of the FLS is described in detail. Section 3 presents the identification strategy and data. Section 4 presents the empirical findings and Section 5 concludes.

Design of the FLS

This section describes the main features of the design of the FLS as of its launch in June 2012 and after its extension in April 2013. Both are important for the identification strategy used in this study (Bank of England, 2012, 2013a, 2013b, Churm et al., 2012). Subsequent further amendments to the design of the scheme are omitted because these changes are not relevant for the sample period and identification strategy used in this study.[4]

The initial design of the FLS (2012 Q3- 2013 Q4)

The first phase of the FLS ran between 2012 Q3 and 2013 Q4 and offered funding to banks of tenor of up to 4 years, from the time this was drawn down.[5] Both the price and quantity of funding available to a bank via the FLS were linked to the strength of its lending to the UK real economy[6]. The amount of funding available to a bank through the Scheme (their 'allowance') consisted of two parts. *First,*

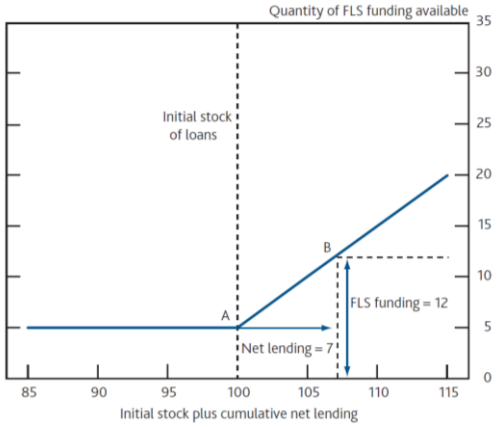
4. The design of the scheme was subsequently amended further in November 2013 to remove direct incentives for banks to lend to the household sector and in December 2014 a further extension of one year was announced.

5. The FLS actually does not offer money. Instead, to lower banks' funding costs, it offers Treasury bills in exchange for a wide range of collateral that includes portfolios of loans, various forms of asset-backed securities and covered bonds, and sovereign and central bank debt. Participants can apply to use newly generated loans as collateral in the FLS if they wish, but equally participants can use any eligible assets already on their balance sheet.

6. Households and private non-financial corporations (PNFCs).

each bank could borrow an initial amount of up to 5% of its stock of existing loans (as of end-June 2012) to the real economy. *Second*, banks were eligible to borrow additional funding equal to any positive net lending –gross lending minus repayments – that they did during the six quarters from 2013 Q3 to 2013 Q4 (hereafter the 'reference period'). For example, a bank which had a stock of lending to the real economy of GBP 100 billion (Point A on Figure 1) at the end of June 2012 was initially entitled to GBP 5 billion of funding. If that bank then lent a further GBP 7 billion during the reference period, it moved to Point B on Figure 1 and was able to borrow a further GBP 7 billion of funding, so GBP 12 billion in total.

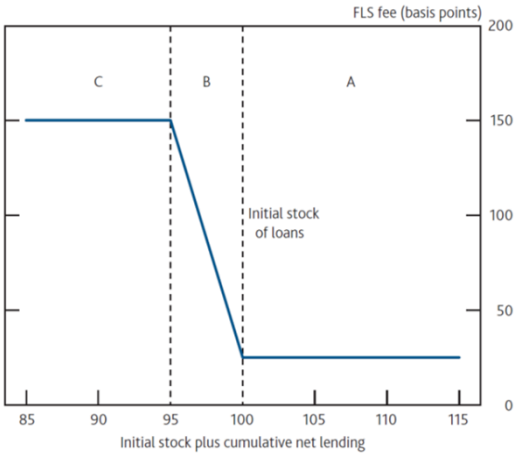
Figure 1. How the quantity of available FLS funding varied with lending (2012 Q3 – 2013 Q4)[1]



1. All numbers are indexed relative to the initial stock of loans = 100.

Source: Bank of England, 2012.

Figure 2. Fee charged on FLS funding in the first phase[1]



1. All numbers are indexed relative to the initial stock of loans = 100.

Source: Bank of England, 2012.

Price-based incentives to lend were also embedded within the Scheme, as banks that borrowed from the FLS had to pay a fee that was a function of their net lending. Specifically:

- Banks that maintained or expanded their lending over the reference period paid a fee of 25 basis points per year – zone A on Figure 2.

- Banks that contracted their stock of loans by less than 5% paid an additional 25 basis points for each single percentage point fall in net lending – zone B on Figure 2. The fee increased linearly up to a maximum of 150 basis points. For example, a bank that had an initial stock of GBP 100 billion, which fell by GBP 3 billion (that is, 3%) over the reference period, had to pay a fee of 100 basis points on up to GBP 5 billion of FLS funding.
- Banks that contract their stock of loans by more than 5% paid the maximum fee of 150 basis points – zone C on Figure 2.

The first extension to the FLS

An extension of the FLS by one year was announced on 24 April 2013, allowing banks to accumulate funding allowances between that time and the end of 2014, and allowing drawdowns of those allowances up to the end of January 2015. Crucially for the identification used in this paper, the design of the direct incentives embedded within the scheme was also amended for this FLS extension. Under the initial design, an additional GBP 1 of new net lending (i.e. new gross lending net of repayments) to either households or companies of any size increased that bank's funding allowance through the Scheme by GBP 1. Under the terms of the extension, an Initial Borrowing Allowance was determined on the basis of net lending over the period from 2013 Q2 to 2013 Q4. GDP 1 of lending to households and larger companies continued to be associated with an increase of GBP 1 in a bank's allowance, but an additional pound of net lending to SMEs increased this initial allowance by GBP 10, thereby sharpening the incentives to lend to SMEs. The initial allowance was therefore equal to the sum of net lending over this period to UK resident households, Large Corporates, and selected non-bank credit providers (NBCPs) that are not part of the bank, plus ten times net lending to SMEs. In the event that this weighted sum was negative, the Initial Allowance would be set to zero. This study focussed on banks' lending behaviour during the reference period for the extensions initial allowance (i.e. 2013 Q2 – 2013 Q4).

An Additional Allowance was then to be determined by net lending during the period from 2014 Q1 to 2014 Q4 and was equal to the sum of net lending to Large Corporates, and selected NBCPs that are not part of the FLS Group, plus five times net lending to SMEs. It is this 'front loading' of incentives to lend to SMEs (i.e. the incentives were greater for lending in 2013 than 2014) which means that it is worth looking for an effect on the supply of credit to SMEs between 2013 Q2 and 2013 Q4.

Table 1. The summary of quantity incentives within the FLS

Announcement	Reference period for econometric analysis	Drawdown period	Households	SMEs	Large private non-financial corporations
June 2012	2012 Q2 – 2013 Q4	August 2012 - January 2014	1	1	1
April 2013	2013 Q2- 2013 Q4 (for Initial Allowance)	February 2014 – January 2015	1 (reduced to zero in November 2013)	10	1

Identification strategy and data

The identification strategy is based on a change in the FLS made in April 2013. This extension sharpened the incentives for banks and building societies to lend to SMEs both in absolute terms and relative to incentives for lending to larger companies. As explained above, this extension to the scheme increased the amount of funding banks were allowed to access in return for every additional pound of net

lending to SMEs from GBP 1 under the initial version of the scheme to GBP 10 for net lending during the reminding 2013 and GBP 5 for net lending during 2014. The one-for-one ratio of funding for additional net lending was maintained for lending to larger companies and (until a subsequent announcement in November 2013) households. As a result there is reason to suspect that a change in relative credit supply conditions may have intentionally led to a pickup in lending to SMEs relative to larger companies. Without obvious reason to expect a differential impact of the extension on the demand for credit from different types of companies, the extension therefore provides an opportunity to identify a direct impact of the incentives embedded within the scheme on credit supply. The 'front-loading' was intended to incentivise banks to expand lending to SMEs relatively quickly, which is why this study looks for impacts on net lending within 2013. However, it is acknowledged that it is plausible that lenders took longer to respond to increased incentives to lend to SMEs, in which case effects may have come through after the end of the sample period used in this study.

This identification strategy was implemented via the estimation of a difference-in-difference model, intended to capture differential movements in proxies of credit supply to SMEs relative to larger companies. The use of difference-in-difference techniques is a standard way to evaluate the impact of economic policies (Degryse et al., 2009). The following equation (1) is estimated with bank-level clustering of the errors, which allows for correlation of the error term over time within banks (Bertrand et al., 2004):

$$\begin{aligned}\Delta L_{ijt} = \alpha_1 + \alpha_2 FLS_t + \sum_{j=1}^{2} \beta_j FLS_t * Borrower_j + \sum_{j=1}^{2} \gamma_j FLS_t * Borrower_j \\ * Bank\ characteristics_{i0} + \varphi Bank\ characteristics_{i0} \\ + \sum_{i=1}^{N} \theta_i Bank_i + \sum_{t=1}^{T} \mu_t Time_t + \sum_{j=1}^{2} \rho_j Borrower_j + \varepsilon_{ijt}\end{aligned} \quad (1)$$

Where ΔL_{ijt} represents either loan growth or credit conditions (depending on the precise specification) by bank *i* to borrower type *j* (small, medium or large firms) at time *t.* We have two versions of the borrower dummies depending on the data availability. We are able to distinguish between SMEs (with turnover of less than less than £25 million) and larger businesses (over £25 million) and sometimes we can further distinguish between small (with an annual turnover of under £1 million) and medium-sized companies (annual turnover of between £1 million and £25 million). FLS_t is a dummy variable that is equal to one after greater incentives to boost lending to SMEs were announced with the FLS extension of April 2013 and zero before then. $Borrower_j$ is a dummy variable that is equal to 1 for borrower type *j* (namely for SMEs, with large businesses serving as a benchmark). Following the literature on the monetary policy transmission initiated by Kashyap and Stein (2000), $Bank\ characteristics$ capture channels that influence the transmission of the FLS, such as bank leverage, bank capitalization, liquidity, the share of loan loss provisions to total loans (as a proxy for the quality of their loan books), the importance of real economy lending to a bank's business model (proxied by the share of interest income in total income), loan-to-deposit ratio and bank size (logarithm of total assets). To reduce endogeneity bias, we take values of these variables from before the initial announcement of the FLS scheme. The estimates also control for a full set of *Bank*, *Time* and *Borrower* fixed effects. The coefficient of $\beta_1$captures the impact of the new design of the FLS on the rate of growth of net lending to SMEs, or changes in credit conditions to SMEs, relatively to large businesses. The coefficient γ_1 indicates the effect of banks' characteristics on the transmission of the policy.

The estimation is performed with a panel of quarterly data from ten large British banks (at the consolidated - i.e. group - level) for the period between the first quarter of 2012 and the first quarter of 2014. The sample is limited by the number of banking groups for which we have data on loan growth that is disaggregated by lending to SMEs and large firms and the data is further limited to 8 banks in the regressions with control variables relating to the balance sheet of the lenders. This sample accounts for around two thirds of total lending by UK monetary and financial institutions to UK non-financial businesses; and, within this, the banking groups included account for around two thirds of lending to UK SMEs.

Further metrics of credit availability were sourced from the BoE's *Credit Conditions Survey* (CCS). The CCS asks lenders a number of questions intended to help distinguish between changes over time in the supply of, and demand for, credit. Of particular interest in this context, the CCS asks about changes over the previous three months in: a lender's perception of 'credit availability', framed in those terms; the proportion of corporate loan applications receiving approval; spreads over reference rates on corporate lending; fees and commissions associated with new loans; and the stringency of collateral requirements for new lending.[7] Answers to these questions are aggregated into an indicative numerical summary statistic, which is available separately for small, medium and larger companies.[8] This data allows us to investigate whether there is any evidence that the incentives embedded in the extension of the FLS had a discernible differential impact on these metrics of corporate credit availability, across businesses of different sizes: small and medium-sized companies.

It is important to take special care when conducting quantitative analysis using the numerical 'scores' reported in the CCS. The most fundamental reason for this is that the 'scores' are indicative numerical aggregators of the qualitative responses given by lenders, which are themselves to some extent necessarily subjective. Further, where it is possible to study the relationship between CCS scores and official data on lending to corporates, Bell and Pugh (2014) find that the relationships between these series appear less strong for corporate than household lending.[9] However, while these considerations caution against over-weighting econometric approaches seeking to explain movements in CCS scores over time, the fact that these scores capture dimensions of credit supply, including non-price features, that are either inherently unobservable or on which there is a lack of hard data suggests that they can play a useful role in checking the robustness of results.

Variables relating to characteristics of lenders' balance sheets were sourced from regulatory returns submitted to the UK Financial Services Authority.[10] Aggregations of this data are publically available, including in the form of the IMF *Financial Soundness Indicators* and the ECB *Consolidated Banking Data*. However, regulatory data for individual institutions are not published.[11] Detailed

7. For the precise framing of these questions, and more information about the design and purpose of the Credit Conditions Survey more generally, see the latest version of the survey (http://www.bankofengland.co.uk/publications/Documents/other/monetary/ccs/creditconditionssurvey141007.pdf) and an article in the Bank of England's Quarterly Bulletin from the time of its launch (http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/qb070303.pdf).

8. Responses that a variable has changed 'a lot' are given twice as much weight as responses of 'a little'. Scores are then weighted by lenders' shares in the relevant market in order to calculate 'net percentage balances – the difference between the weighted balance of lenders reporting that a variable had moved in one direction as opposed to the other which is scaled to fit the interval +/- 100.

9. 'The Bank of England Credit Conditions Survey', Bell and Pugh, Bank of England Working Paper No. 515, November 2014 (http://www.bankofengland.co.uk/research/Documents/workingpapers/2014/wp515.pdf).

10. Since 1 April 2013, responsibility for microprudential regulation has sat with the Prudential Regulation Authority, which is a subsidiary of the Bank of England.

information on variable definitions is provided in Appendix A. Descriptive statistics on variables used in the final analysis is provided in Table 2.

Empirical findings

Before turning to econometric results, it is important to check that the "parallel trends" assumption required for a difference-in-difference approach to be valid is verified. Figure 3 shows loan growth to SMEs and large firms for the analysed period. Importantly, before the change in the FLS in April 2013, loan growth to both types of borrowers was highly correlated and looks to have moved in a manner that is sufficiently consistent with parallel trends assumption being valid for the study to proceed using a difference-in-difference approach. Therefore, large firms can serve as a viable control group in the econometric estimation.

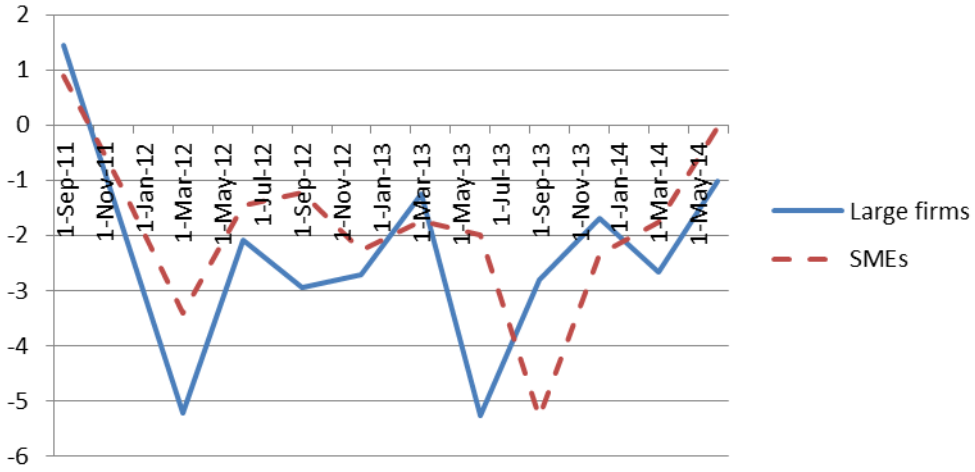
Given the small size of sample, a restricted version of our model (1) is first estimated without bank characteristics. Results are presented in Table 3 and it documents the estimated differential impact of the FLS on loan growth and credit conditions, for SMEs relative to large companies. In the first specification, we distinguish between the impact of the FLS on the loan growth to the SME relatively to large firms and our variable of interest, FLS*SME, is not statistically significant. Further specifications present credit conditions as dependant variables. These specifications allow distinguishing the effect separately for small and medium firms, but the findings are also not statistically significant. Therefore, on the basis of the existing dataset used, it is not possible to find a direct effect on loan supply to SMEs within 2013, relative to large firms, as a result of the sharpening of incentives to lend to SMEs within the second phase of the FLS.

Table 2. Descriptive statistics for variables used in difference-in-difference regressions

Variable		Obs	Mean	Std. Dev.
Loan growth	Net loans (new loans minus repayments) divided by the stock of loans (in %)	180	-2.37	5.91
Size	Logarithm of total assets	144	19.65	1.58
Leverage (Core)	Core tier 1 capital divided by total assets (in %)	144	4.98	1.66
Capital (Core)	Core tier 1 capital divided by risk-weighted total assets (in %)	144	14.81	2.94
Capital (Tier 1)	Total Tier 1 capital after deductions divided by risk-weighted total assets (in %)	144	15.04	3.00
Funding cost	Interest expenses divided by total liabilities	144	0.74	0.34
Liquidity	Treasury bills and other eligible bills divided by total assets (in %)	144	2.78	4.52
Loan/dep	Loans and advances to customers divided by customer deposits (in %)	144	85.47	23.51
Model	Interest income divided by the sum of interest, trading and fee and commission incomes (in %)	144	79.66	10.28

11. These data were collected under the Financial Services and Markets Act 2000. In particular, this analysis uses data from the FSA001 balance sheet, FSA002 income statement and FSA003 capital adequacy data items from regulatory returns which were submitted to the FSA by all UK deposit takers and some investment firms, the latter of which is reported according to Basel II rules. Publicly available information on these data can be found on this FSA handbook webpage.

Figure 3. Loan growth to SMEs and large firms (in %)



Note: This figure uses average data for loan growth to companies by 10 banks, unweighted by size.

The results are robust to various metrics of loan supply, such as loan growth, banks' perceptions of credit availability, the proportion of loan applications that are approved, lending fees and lending spreads, as well as collateral requirements on new lending. These results are also robust to further limiting the sample to banks that have actually signed up for the FLS scheme, although this sub-sample includes only four banks. When testing for temporary effects, by splitting the FLS*SME variable into 5 variables for each quarter after the sharpening of incentives to lend to SMEs, the results also remain statistically insignificant.[12]

Table 3. Impact of FSL on loan growth and credit conditions[1]

	Loan growth	Credit conditions											
		Availability		Approved		Fees		Spread		Collateral			
FLS*SME	-0.46												
	(1.57)												
FLS*small		-0.04		-0.43		-0.94		-0.93		-16.8			
		(0.77)		0.76		(0.73)		(0.69)		(6,43)			
FLS*medium			-0.73		-0.51		-0.4		-0.26		-2.18		
			(0.72)		(0.81)		(0.64)		(0.6)		(1.43)		
Observations	180	202	226	206	231	204	230	202	228	203	230		
R-squared	0.299												

1. Regression with loan growth as dependant variable are estimated with OLS with standard errors clustered at bank level. Regressions with credit conditions as dependant variables are estimated with ordered logit. FLS*SME (FLS*Small, FLS*Medium) are interaction variables that equal to 1 for SME (small firms, medium firm) for the period during which the incentives to SME lending was provided under the extension of the Funding for Lending Scheme. All regressions include bank, time and borrower fixed effects that are not presented to have compact tables. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

12. The results of two last robustness tests (reducing the sample to FLS participants and dynamic effects) are available from authors upon request.

Table 4 reports specifications that explore the monetary transmission mechanism by testing whether the FLS has affected loan supply to SMEs differently depending on various bank characteristics, such as funding costs, bank size, leverage, capital ratio, loan loss provisions ratio, loan-to-deposit ratio and business model that were defined in Table 2. Given our limited sample size and high correlation between these variables, only one interaction variable is introduced in each case. The results show that banks with higher funding costs prior to the introduction of the FLS increased loan supply to SMEs relative to large companies after the extension of the scheme. However, since the average impact on SMEs relative to large companies is statistically insignificant from zero, this also suggests that some banks with lower funding costs could have reduced their supply of loans to SMEs relative to large companies. Importantly, there is no evidence that either leverage or capital requirements constrained loan supply to SMEs. Retail banks with higher loan-to-asset ratio also increased their loan supply. Finally, liquidity appears to have a surprising negative sign, meaning that banks with a higher share of their assets held in the form of Treasury bills and other eligible bills decreased their loan supply to SMEs, relative to large companies, after the introduction of the FLS. This puzzling finding could be explained by the fact that banks with a high proportion of liquid assets are also banks with a larger focus on investment activities, and hence this variable proxies for banks' business models. More generally, the results with interaction variables should be interpreted with extreme caution, because a sample of 8 banks provides insufficient heterogeneity for robust analysis.

Table 4. Impact of the FLS on loan growth depending on bank characteristics[1]

Dependant variable	Loan growth										
FLS*SME	-3.92**	-4.03	1.51	2.63	0.55	-3.28	-8.3***	0.58	0.48	-9.02	-0.55
	(1.96)	(9.1)	(2.57)	(2.48)	(3.86)	(3.84)	(2.88)	(1.44)	(1.27)	(5.73)	(1.22)
FLS*SME*Funding cost	4.51**										
	(2.08)										
FLS*SME*Size		0.18									
		(0.46)									
FLS*SME*leverage (Tier 1)			-0.41								
			(0.45)								
FLS*SME*leverage (Core)				-0.64							
				(0.43)							
FLS*SME*capital (Core)					-0.07						
					(0.25)						
FLS*SME*capital (Tier 1)						0.18					
						(0.24)					
FLS*SME*loan/dep							0.09***				
							(0.03)				
FLS*SME*LLP								-1.19			
								(0.82)			
FLS*SME*liquidity									-0.37**		
									(0.16)		
FLS*SME*model										0.11	
										(0.07)	
Constant	2.21*	-2.11	-1.79	-0.91	-2.02	-1.55	-1.43	-1.65	-0.23	-0.25	2.24*
	(1.27)	(1.28)	(1.32)	(1.27)	(1.33)	(1.33)	(1.26)	(1.31)	(1.33)	(1.29)	(1.29)
Observations	144	144	144	144	144	144	144	144	144	144	144
R-squared	0.41	0.38	0.38	0.39	0.38	0.38	0.42	0.39	0.41	0.39	0.38

1. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Concluding remarks

This paper studies whether much sharper incentives to lend to SMEs introduced alongside the extension of the FLS in April 2013 have had an impact on the credit supply to SMEs. To separate credit supply from demand factors, the identification strategy exploits amendments to the design of the FLS for this extension that aimed to sharpen incentives for SME lending. Adopting a difference-in-difference approach, this study detects no statistically significant direct effect of this sharpening of incentives on the provision of bank lending to SMEs relative to large companies. The results are robust to the use of several alternative metrics of loan supply, such as loan growth, banks' perceptions of credit availability, share of approved loans, fees and spreads, as well as collateral requirements.

Unfortunately, limited data availability does not allow exploring why the FLS has not succeeded in spurring credit supply to SMEs. Hence, this paper is also a plea for central banks to collect more detailed data on credit provision to SMEs. Data should be collected not only for the largest banks, but also for smaller ones. In particular, challenger banks could be prominent in credit provision to SMEs, but data on them was not collected by the Bank of England[13].

13. Data on SMEs loans is only available for smaller banks that have participated in the FLS for period after the introduction of the scheme, which prevents the use of the difference-in-difference identification strategy.

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APPENDIX A. DEFINITION OF VARIABLES

Variable	Data point	Definition
Total Assets	FSA001 020A + 020B	The sum of the trading book total assets plus the non-trading book total assets will equal the sum of total liabilities and equity of the firm in data element 45A.
Called up Share Capital	FSA003 042A	Called up share capital, including partnership, LLP and sole trader capital. Exclude holdings by the firm of its own shares and also excess of drawings over profits for partnerships, LLPs or sole traders. Building societies should exclude PIBS.
Tier 1 Capital after Deductions	FSA003 024A	The sum of core tier 1 capital (*see below*), perpetual non-cumulative preference shares and eligible innovative tier 1 and hybrid instruments. Figure shown is net of deductions, including for investments in own shares, intangible assets and net losses on available-for-sale equities.
Core Tier 1 Capital	FSA003 017A	The sum of permanent share capital, eligible partnership, LLP or sole trader capital, share premium account, previous years' net profits and eligible interim net profits. Figure shown is gross (i.e. no regulatory deductions apply).
Risk-Weighted Assets	FSA003 070A multiplied by 12.5	For banks and building societies, 070A is the sum of credit risk, market risk and operational risk capital requirements. This figure is multiplied by 12.5 to convert to RWAs, since total variable capital requirements are 8% of RWAs.
Treasury Bills and Other Eligible Bills	FSA001 007A + 007B	Holdings of treasury bills or other securities eligible for use at central banks.
Interest Income	FSA002 002B	The sum of income on retail secured loans, retail unsecured loans (including bank deposits) and card accounts.
Trading Income (losses)	FSA002 015B	The sum of income on trading investments, charges on UCITS sales/redemptions and income on foreign exchange.
Fee and commission income	FSA002 007B	The sum of commission/brokerage earned, corporate finance income, and performance, investment management, advisory and UCITS management fees.
Loans and advances to customers	FSA001 009A + 009B	All funds lent or placed with all counterparties other than credit institutions (i.e. banks and building societies).
Customer deposits	FSA001 024A	All deposits from customers other than credit institutions, including retail, corporate intra-group and public sector deposits, and e-money issued.
Provisions	FSA001 037A	General provisions and collective impairment that are held against possible or latent losses but where the losses have not yet been identified, in line with the accounting practice adopted by the firm.
Interest Expenses	FSA002 026B	Total interest paid, including on bank/building society, retail, corporate, intra-group and public sector deposits.
Total Liabilities	FSA001 041A	The sum of own bank notes issued, items in the course of collection due, customer deposits, trading liabilities, debt securities in issue, derivative liabilities, liabilities in respect of sale/repurchase agreements, cash collateral received for securities lent, retirement benefit liabilities, taxation liabilities, provisions, subordinated liabilities, accruals and deferred income.