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Much ado about nothing? Interest and non-interest products and services: Their impact on small banks' margins

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Abstract: We investigate the impact of interest and non-interest products and services on the margin a bank can derive from a specific customer. The analysis is based on 4,277 observations of relationships between small cooperative banks and small and medium-sized enterprises (SME) in Finland from 2001 to 2005. The results show that only long-term loans significantly contribute to the bank's margin, whereas short-term loans as well as other additional products and services do not affect the bank's margin, and cash management services even seem to reduce the bank's margin. The findings suggest that small cooperative banks did concentrate on their core business during the first years of this millennium, i.e. lending, instead of diversifying their activities to increase their margin. However, by taking only financial considerations into account, small cooperative banks might forget about the non-financial impacts of their decisions, which may involve a considerable loss of information about SMEs.

Subjects: Corporate Finance; Banking; Credit & Credit Institutions

Keywords: bank profitability; product diversification; lending; small banks; small firms

JEL classification: G21

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PUBLIC INTEREST STATEMENT

We investigate the impact of interest and non-interest products and services on the margin a bank can derive from a specific customer. Our findings suggest that only long-term loans contribute significantly to a bank's margin, whereas short-term loans and providing additional products and services do not affect the margin, in fact the provision of cash management services even reduces the bank's margin. Taking only financial considerations into account, our findings seem to suggest that small cooperative banks should concentrate on their core business, i.e. lending, instead of diversifying their products and services. However, by taking only financial considerations into account, small cooperative banks might forget about the non-financial impacts of their decisions, which may involve a considerable loss of information about SMEs. Small cooperative banks should therefore not only consider the financial contribution of products and services when they decide on specialisation or diversification, but they should also take non-financial aspects, such as the information gained, into consideration.

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1. Introduction

When the Banca de' Medici was founded in Florence almost 650 years ago, its business model was simple: lending money to the powerful for the financing of risky ventures, such as war and trade. At that time, the profits of banks were directly linked to the interest rate charged on loans and the risk of default by traders and governments (Cipolla, 1994). During the last 650 years, the banks' business model has evolved dramatically. Banks have further developed the way in which they make their lending decisions, and today even small banks offer a broad range of financial products and services, such as credit/debit cards, insurance and pension plans as well as cash management, which generate revenues but also additional costs. Hence, the question: Is product and service diversification profitable for banks?

Previous research highlights the numerous benefits of product and service diversification. The findings suggest that by cross-selling other products and services banks can generate additional income (Allen & Jagtiani, 2000), reduce the bond yield spread and overall risk (Deng, Elyasiani, & Mao, 2007), collect more information to improve their customer evaluations (Dell'Ariccia & Marquez, 2004), and better cover customer needs (Binks & Ennew, 1996). However, product and service diversification does not only entail benefits, it also contains challenges, which are mainly associated with increased systematic market risk (Allen & Jagtiani, 2000) and the fact that the demand for additional products and services is found to be strongly related to the economic cycle (DeYoung & Roland, 2001; Mergaerts & Vander Vennet, 2016). Moreover, product and service diversification can generate diseconomies of scope (Köhler, 2014; Laevena & Levine, 2007) and increase the complexity of banks, which can lead to difficulties in overseeing bank assets (Hayden, Porath, & von Westernhagen, 2007).

Prior studies are not only contradictory, they also fail to address two important issues: First, they do not take the specific situation of small local banks into consideration, but mainly concentrate on large banks or on bank holding companies (e.g. Demsetz & Strahan, 1997). Only a few studies focus on small banks or compare the role of product and service diversification in large and small banks (Lepetit, Nys, Rous, & Tarazi, 2008; Mercieca, Schaeck, & Wolfe, 2007). Second, they proxy the impact of product and service diversification on a bank's performance using financial statement information (Dietrich & Wanzenried, 2011; Hayden et al., 2007), which prevents an examination into how specific products or services contribute to the bank's performance at customer level.

We address these issues by investigating the impacts of the different products and services, provided to SME customers by small cooperative banks, on the bank's margin—as realised from the respective SME customer. The analysis is based on a unique data-set collected from 21 small, local, cooperative Finnish banks. It comprises 4,277 firm-year observations from the financial period of December 2001–2005, which are derived from a sample of privately owned SME customers domiciled in Finland. We find that only long-term loans contribute significantly to a bank's margin. However, both short-term loans and additional products and services sold to an SME customer do not seem to affect a bank's margin. The provision of cash management services even seems to reduce their margin.

Our study has important implications for small cooperative banks. Taking only financial considerations into account, our findings seem to suggest that small cooperative banks should concentrate on their core business, i.e. lending, instead of diversifying their products and services. However, by doing so, small cooperative banks would lose a lot of information that can be generated by providing other products and services, such as cash management. Consequently, their understanding of a firm deteriorates, which makes it more difficult for them to assess a firm's creditworthiness or to determine the price of a loan. Thus, small cooperative banks should not only take the financial impact of products and services into account when making diversification decisions, they should also consider non-financial aspects, such as the information gained and related business opportunities.

The remainder of the text is structured as follows: Section 2 illustrates the results of previous research on the impact of diversification on bank profitability and introduces Section 3, in which we

present hypotheses. Section 4 describes the data and methodology and Section 5 the variables used. In Section 6 we provide the summary statistics before describing the analysis and the results in Section 7. Section 8 discusses the findings and concludes.

2. Literature review

Product and service diversification is a broad concept, which banks pursue both at the geographical level by expanding their activities into areas they have not previously served and at product level by expanding the portfolio of products and services they offer to their customers. In the latter case, banks can increase their offer by developing them internally, by outsourcing them or by merging with or acquiring other banks or providers of financial products and services (DeYoung, Evanoff, & Molyneux, 2009). Mergers in the banking industry have been found to be effective at improving bank performance (Lozano-Vivas, Kumbhakar, Fethi, & Shaban, 2011), partly because of the new set of products and services that newly created banks can offer.

The diversification of products and services sold can improve a bank's performance in different ways. First, the bank can benefit from the cross-selling opportunities associated with the provision of non-interest products and services by generating additional income, for example in the form of fees or trading revenue. If the non-interest income derived from these products and services and the net interest income are either negatively or only weakly correlated, the bank may not only be able to diversify its income but could also improve its risk-return trade-off (Stiroh, 2004). Empirical studies suggest that the diversification of investments as well as the diversification of non-traditional banking activities lead to a lower bond yield spread (Deng et al., 2007) and reduce the overall risk of the bank (Allen & Jagtiani, 2000). However, Köhler (2014) highlighted that the impact of non-interest income on bank risk differs between retail- and investment-oriented banks. Second, product and service diversification can provide a bank with additional information about its customers, improving its ability to evaluate their creditworthiness (Strahan & Weston, 1998). This aspect is particularly relevant for small firms that are characterised by a high level of opacity. Finally, product and service diversification gives the bank the opportunity to better meet its customers' needs. Accordingly, customers will be more satisfied and less likely to switch to another bank. This will decrease the turnover in the customer portfolio, which reduces the costs of customer management (Binks & Ennew, 1996).

However, research suggests that there are also negative aspects of product and service diversification. Securities and insurance underwriting activities are found to increase systematic market risk and therefore decrease the ability of banks to diversify (Allen & Jagtiani, 2000). Moreover, product and service diversification does not necessarily decrease the volatility of bank revenue and profits because non-interest income, particularly income derived from trading activities, shows relatively high volatility and is more strongly correlated with the economic cycle, whereas net interest income is less volatile (DeYoung & Roland, 2001; Stiroh, 2004). As a result, it is doubtful that product and service diversification can contribute to stabilising the revenue and profit of banks and thereby reducing risk. Similarly, Fomby, Gunther, and Hu (2012) found an increase in the dependence on the banks' returns and the returns from insurance underwriting, securities brokerage and mortgage finance during the financial crisis, which raises doubts about the ability of financial conglomerates to attenuate negative shocks. Furthermore, product and service diversification is found to generate diseconomies of scope. Bank conglomerates that engage in multiple activities (e.g. lending and non-lending financial services) are found to be valued lower than they would be if they were broken down into financial intermediaries that specialised in the individual activities. This finding suggests that economies of scope are not sufficiently large to produce a product and service diversification premium (Laevena & Levine, 2007). Regarding the impact of product and service diversification on a bank's performance, the findings vary for low-risk and high-risk banks as well as for different European countries (Acharya, Hasan, & Saunders, 2006; Hayden et al., 2007).

The works cited above mainly focus on large banks or bank holding companies and therefore do not consider the specific situation of small banks. The exceptions are the works by Lepetit et al. (2008) and Mercieca et al. (2007). Lepetit et al. (2008) find that small banks show a more pronounced

positive relationship between product and service diversification and risk than large banks, and that this relationship is mainly driven by commission and fee activities. Mercieca et al. (2007) only concentrate on small banks and suggest a negative relationship between non-interest income and bank performance. The limited research on small banks calls for further investigation.

Usually, small banks are operated as traditional lending banks, which are mainly interested in granting and managing loans (Ciarrapico & Cosci, 2011). However, even if income from loans may be the main source of income for them and one of the most important determinants of their profitability, small banks also tend to offer other products and services. Here, they often have a competitive advantage in selling other products and services due to their strong and long-lasting customer relationships (Petersen & Rajan, 1995) and short lines of command. This enables them to collect additional information about their customers' needs (Stein, 2002) and to sell additional products and services that match these needs (Peltoniemi, 2007). In turn, the sale of these products and services may grant the banks access to additional private and privileged information, thereby dramatically increasing the overall amount of hard and soft information available to a bank manager (Berger & Udell, 2006). This additional informal information can effectively improve the banks' ability to evaluate their customers' creditworthiness (Baas & Schrooten, 2006), support a positive and constructive relationship between them and their customers (Elsas & Krahnen, 1998) and even allows them to exploit trusting relationships in order to make lending decisions (Moro & Fink, 2013) or to price loans (Howorth & Moro, 2012).

In addition to the limited number of studies that concentrate on small banks, previous research relies on financial statement information, such as the Return on Average Assets (ROAA), to measure the impact of product and service diversification on a bank's performance (Dietrich & Wanzenried, 2011; Hayden et al., 2007; Mergaerts & Vander Vennet, 2016). However, the use of bank-level data prevents an examination of the financial contribution that the products and services sold to a specific costumer make. Thus, further investigation is needed.

3. Development of the hypotheses

The bank–firm relationship is characterised by a high degree of information asymmetry. Banks aim at reducing this information asymmetry by screening customers. The risk of financial loss, because the firm fails to pay as promised, is reflected in the internal rating given to a firm (Treacy & Carey, 2000). Typically, an internal rating depends on both financial and non-financial factors. Even though small banks, which evaluate small and medium-sized firms, tend to rely to a large extent on non-financial information, financial information, in particular financial statement information and collateral, also plays a vital role in a bank's internal rating (Uchida, 2011). Previous research has found the operating and financial position of a bank to be relevant financial information (Brunner, Krahnen, & Weber, 2000; Krahnen & Weber, 2001). Based on these findings, we argue that there is a positive relationship between a firm's operating and financial position and the internal rating of the firm.

> *H1*: The better a firm's operating and financial position, the better a bank's internal rating of the firm.

The internal rating of a firm provides the basis for the determination of the price of the bank's products and services. A lower internal rating implies that the bank will try to compensate for the risk associated with the respective customer by increasing the price of its products and services. Therefore, the bank's margin will be higher. Thus, we assume a negative relationship between a bank's internal rating of a firm and the bank's margin and formulate the following hypothesis:

> *H2a:* The worse a bank's internal rating of a firm, the higher the bank's margin.

For small cooperative banks, loans are central to their profitability (Dietrich & Wanzenried, 2011) and the pricing of those loans is extremely important. By pricing the loans according to the risk involved banks aim at being compensated for the risk that a firm will not repay the loan. Thus, low-risk

firms should be charged lower interest rates than high-risk firms. The findings of Blackwell and Winters (1997) as well as Machauer and Weber (1998) support this assumption. The positive relationship between risk and interest rate should also be reflected in a bank's margin: the lower the risk (the bank gives a good internal rating to a firm) and the lower the interest rate, the lower the bank's margin. In contrast, the higher the risk (the bank gives a poor internal rating to a firm) and the higher the interest rate, the higher the bank's margin.

However, the riskiness of a firm does not only affect the interest rate charged, it might also affect the amount a bank is prepared to lend, since the loss at default (a bank's risk exposure) increases with the amount lent to the firm. We therefore argue that low-risk firms are more likely to receive bigger loans than high-risk firms. In turn, the size of the loan should be associated both with its price, as banks might try to compensate for their risk exposure by charging a higher interest rate, and directly with the bank's margin because other fees, such as handling charges, increase with the size of the loan. Overall, the negative relationship between a bank's internal rating of a firm and the bank's margin is mediated by the interest rate and the amount of short-term and long-term loans. We therefore propose the following hypotheses:

> *H2b*: The negative effect of a bank's internal rating of a firm on the bank's margin is mediated by the size of the loan and the interest rate on short-term loans.

> *H2c*: The negative effect of a bank's internal rating of a firm on the bank's margin is mediated by the size of the loan and the interest rate on long-term loans.

The bank's margin is further positively associated with the length of the relationship between the bank and the firm. Small firms often incur high costs when searching for an alternative bank because they struggle to provide these banks with the information required (Farinha & Santos, 2002) and their managers often lack the skills and the time necessary to evaluate the proposals of alternative banks (Howorth, Peel, & Wilson, 2003). Hence, small firms are effectively "locked-in" (Ongena & Smith, 2001). Small cooperative banks benefit from this situation in two ways. First, a relationship that has endured for a long time enables them to collect additional information about the firm (Carter, McNulty, & Verbrugge, 2004). This helps them to align the products and services with the firm's needs. Second, they are able to extract higher rents, as they can avoid passing on to the customer all the benefits gained from the additional information gathered (Ergungor, 2005). This is particularly true when banks operate in a context of reduced competition. Based on these arguments, we formulate the following hypothesis:

> *H3a*: The longer the relationship between a bank and a firm, the higher the bank's margin.

The length of the relationship between the bank and the firm might, however, not only have a direct impact on the bank's margin, but also increase the bank's ability to provide additional products and services, which should also affect the bank's margin. In addition to lending, a bank's provision of products and services helps prevent firms from switching to alternative banks and increases their revenue without being adversely affected by a deterioration in the risk profile. This is particularly true when products and services do not bear any additional risk, e.g. in the case of debit cards or asset management, or when banks merely act as a broker for financial products. The longer the relationship between a bank and a firm, the better the bank's knowledge of the firm's economic and financial performance and its strategic plans, such as its future target markets and its risk exposure. This knowledge enables the bank to better align the products and services with the firm's needs, which may, in turn, increase the number of products and services that the firm obtains from the bank. We therefore argue that the relationship between the length of a firm and a bank's association and the bank's margin is mediated by the number of products and services provided.

> *H3b*: The positive effect of the length of a relationship between a bank and a firm on the bank's margin is mediated by the number of products and services sold to the firm.

Figure 1. Research model.
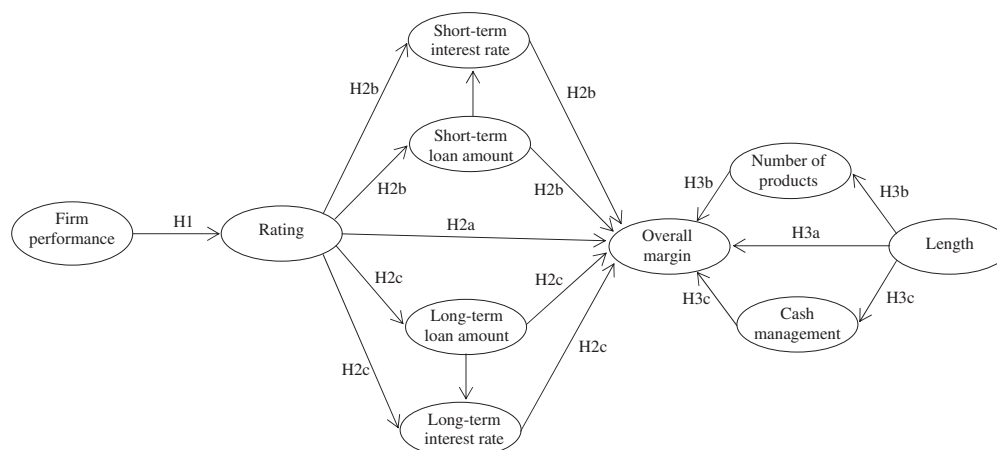
Moreover, the positive relationship between the length of the association and a bank's margin will also be affected by the bank's provision of cash management services. Cash management services comprise the management of the inflows and outflows of cash and typically support the bank in collecting additional information about their customers' performance, as the monitoring of changes in the trend of a customer's cash flow enables it to gain a clear idea about the performance of the customer and its ability to repay the loan (Petersen & Rajan, 1994). From the firm's point of view, the relationship between the bank and the firm is one of the central criteria for its choice of the cash management bank (Mols, Nikolaj, Bukh, & Blenker, 1997). As the relationship between the firm and the bank becomes closer over time, the probability increases that the firm assigns its cash management to the bank. Since the bank may charge a fee for the provision of these services, its margin may increase. Thus, the positive association between the length of the relationship and the bank's margin may also be affected by the provision of cash management services. Based on these arguments, we formulate the following hypothesis:

H3c: The positive effect of the length of a relationship on a bank's margin is mediated by the provision of cash management services to the firm.

The resulting research model is summarised in Figure 1.

4. Data and methodology

Our research is based on a sample of privately owned SMEs domiciled in Finland and comprises 4,277 SME-year observations from the financial period of December 2001–2005. The data were provided by 21 small, local, cooperative Finnish banks. All the banks in the sample have only a few branches and very short lines of command. As they are small and therefore not able to approach regulated markets, they tend to rely on deposits. Moreover, the banks have very similar asset–liability mixes because they all tend to finance local households and local SMEs. The amount of loan losses in the sample period is relatively low. On average the banks recorded loan losses of 1,875 thousand Euros per year, which accounts for 0.3% of their total assets. The differences between the banks are very small and not statistically significant. These banks operate in a context characterised by limited competition, because the three biggest banks account for over 75% of the market share, calculated based on their total assets. Overall, the banks are similar, not only in terms of their cost structure, deposit and credit strategy, and asset–liability mix, but also in terms of their management objectives and style, operating efficiency and the market served. In line with prior literature, the sample includes only non-financial SMEs (Table 1).

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Table 1. Bank characteristics and firm sample by bank								
Bank	**Bank data**						**Firms per bank**	
	Net profit	**Assets**	**Equity**	**Solvency (%)**	**Cost/ revenues (%)**	**Nonperforming assets (%)**	**Firms**	**Firms by bank (%)**
1	7,613	441,024	49,213	22.6	56.1	0.7	179	4.2
2	4,673	416,693	23,778	20.9	66.3	0.5	151	3.5
3	7,777	502,571	48,544	21.4	59.9	0.5	188	4.4
4	9,490	679,643	100,525	27.1	63.4	0.8	253	5.9
5	5,572	513,603	36,934	14.8	67.3	0.5	180	4.2
6	5,835	421,905	36,064	15.8	62.4	0.9	150	3.5
7	4,842	405,812	33,927	18.3	67.1	0.4	130	3.0
8	14,932	1,202,882	73,311	11.4	64.1	0.5	378	8.8
9	12,051	752,774	68,418	19.3	55.2	0.3	258	6.0
10	3,251	367,396	23,635	14.0	72.6	0.7	121	2.8
11	4,823	505,569	41,486	17.0	70.0	0.3	138	3.2
12	4,678	510,144	29,443	11.9	74.4	0.7	158	3.7
13	10,665	1,076,093	61,652	12.1	69.2	0.5	294	6.9
14	5,531	431,610	33,155	12.7	74.8	0.9	169	3.9
15	9,546	627,189	55,312	18.1	63.2	0.2	238	5.6
16	2,201	574,952	19,972	9.7	87.4	0.9	158	3.7
17	7,388	341,966	60,789	32.7	50.7	0.3	130	3.0
18	10,152	1,290,003	57,682	10.9	76.8	0.5	342	8.0
19	8,611	1,411,773	53,761	12.3	80.4	1.0	329	7.7
20	5,723	594,953	36,664	15.2	69.1	0.8	153	3.6
21	4,557	457,303	33,083	15.8	71.5	0.9	188	4.4

Notes: This table presents the bank characteristics and the number of firms by bank. The values are displayed as thousands of euros. All values are year-end average values in the sample period.

The data-set is derived from the banks' internal databases and contains firm-specific information, such as financial figures and the internal ratings of the firms, as well as information about the bank–firm relationship, such as data about the terms of the loan, the different products and services provided to the firm, or the length of the relationship. Both firm-specific information and information about the bank–firm relationship are captured at the end of December in each year considered. In addition, banks evaluate and assign internal credit ratings to firms. The internal ratings summarise information about firm quality and credit risk in broad terms and are determined by firm–specific information. Internal ratings are assigned in order to comply with Basel II capital adequacy rules using the F-IRB (foundation internal-rating-based approach) to estimate a firm's probability of default.[1] All the banks considered in our sample rely on the same rating system, which uses the same set of variables, giving them the same weight. This implies that the credit evaluation is not bank-dependent and that if one of the firms considered in our sample moves from one bank to another one, it is rated in the same way. This aspect is not trivial, since differences in the way in which banks evaluate and rate a firm could have adversely affected the consistency of our results. The credit rating system looks at a firm's performance and relies on the information that the bank can access from the firm's financial report and from the bank's system archives. The loan managers who deal with the customer oversee feeding the system with data and revising the rating, typically on a yearly basis, although riskier customers may be re-evaluated more frequently. The rating system focuses on the creditworthiness of the customer and is used by loan managers to make lending decisions. Loan managers are allowed some room for manoeuvre, but this is smaller when dealing with riskier customers.

The analysis was carried out with STATA version 14. We employ structural equation modelling (SEM) because of its ability to leverage model complexity. Our model takes account the process of evaluating a firm's creditworthiness based on firm's financial performance, the banking services provided (short- and long-term loans and other services) and the overall margin the bank generates from a bank–firm relationship. Testing such a model involves simultaneous estimation of multiple and interrelated dependent relationship between variables. First, we created a measurement model for firm performance. We included firm performance variables that have an average variance extracted (AVE) higher than 0.5. A firm's total assets, equity ratio and return on equity were included in the measurement model. Then, we constructed the structural model based on the literature review and the development of the hypotheses. We validated our structural model through the assessing of effect sizes. Additionally, we run diagnostic tests on potential influential outliers that could affect our estimates. However, we did not identify any influential ourliers among our observations. Finally, prior literature and practical intuition were prioritised over empirical assessment when constructing the structural model.

5. Description of the variables

The response variable is the bank's realised margin generated by loans and other financial products or services that are provided to an SME customer. The participating banks use activity-based costing to monitor the margin generated from each customer. They calculate the margin as the difference between (1) the income generated from the customer in terms of interest payments on short- and long-term loans as well as fees paid to the bank, (2) the interest that the bank pays to the providers of funds (be they savers, bondholders, etc.) plus the fees that the bank must pay when it outsources or buys external financial services and (3) the cost of the time their personnel allocates to the respective customer.

$$\mathbf{Margin} = \sum \left[i_{\mathrm{SME}}^{\mathrm{STD}}(\mathrm{STD}) + i_{\mathrm{SME}}^{\mathrm{LTD}}(\mathrm{LTD}) - i_{\mathrm{BANK}}(\mathrm{STD} + \mathrm{LTD}) \right] + \sum \left[(\mathrm{fee}_{\mathrm{SME}} - \mathrm{fee}_{\mathrm{BANK}} \right] - \mathrm{Pers}$$

where $i_{\mathrm{SME}}^{\mathrm{STD}}$ is the specific interest rate charged to the customer for short-term loans, **STD** is the short-term loan amount, $i_{\mathrm{SME}}^{\mathrm{LTD}}$ is the specific interest rate charged to the customer for long-term loans, **LTD** is the long-term loan amount, i_{BANK} is the average cost of funding for the bank, $\mathbf{fee}_{\mathrm{SME}}$ and $\mathbf{fee}_{\mathrm{BANK}}$ are the fees received from the customer and the costs of the products or services provided to that customer which are outsourced or bought from other financial institutions, respectively, and *Pers* is the cost of the personnel involved in assisting the customer.

The core variables used in our present work are products and services provided by the bank. They include the amount and the price of short-term loans, the amount and the price of long-term loans, the provision of cash management services and the number of additional products or services provided by the bank. The amount of short-term and long-term loans is expressed in euros. The price of short-term and long-term loans equals the interest rate in percentage form. Furthermore, we use a dummy variable for a bank's management of a firm's incoming and outgoing cash flows. The dummy has a value of 1 when the firm relies on the bank to manage its payments, and 0 otherwise. In addition to that, we include the number of additional products or services provided to the firm. The products and services included do not bear any additional risk for the bank, either because they are free of risk, as in the case of debit cards or asset management, or because the bank does not have to bear the risk linked to the respective product or service. The latter is the case if risk-bearing products or services are intermediated by the bank, for example when options or futures are provided by another financial institution but sold by the bank. Moreover, the banks in our sample do not provide investment bank services, such as the underwriting of bonds for firms, advice on mergers and acquisitions activities or support for IPOs. The variable used does not discriminate between different services, their level of sophistication or the intensity with which customers use them because such

discrimination would entail a high level of subjective evaluation. Overall, the number of products and services purchased by a customer is a good proxy for a bank's diversification and the diversification of income that a bank obtains from it.

Our model suggests that there are several variables which are expected to affect a bank's margin both directly and indirectly via the various products and services provided. These variables include the bank's internal rating of a customer which reflects the customer's creditworthiness. It is based on a scale ranging from 3 for customers with high creditworthiness to 11 for customers with low creditworthiness. The absence of customers with internal ratings of 1 or 2 is since none of the firms included in the sample are publicly listed, which prevents them from receiving the best internal ratings. A firm with a good internal rating should decrease the bank's margin because it reduces the bank's risk. We coded internal rating that bigger number accounts for a better rating. For the firm's operating and financial performance, we choose total assets, equity ratio and return on equity. Total assets reflect the size of the firm. Equity ratio is the ratio of equity and total assets. Return on equity is calculated as the ratio of net income and equity and it measures a firm's profitability.

6. Summary statistics

Table 2 reports the summarised statistics of the variables considered.

SMEs tend to use more long-term loans (average 0.536) than short-term loans (average 0.178). The average amount of long-term credit is 1,161 thousand euros and the average amount of short-term credit is 138 thousand euros. The average length of the relationships in our sample is above 15 years, with the longest at 66 years, suggesting stable relationships between the SMEs and the banks. Our average length of relationship is longer than the average length found in the seminal works on lending relationships by Petersen and Rajan (1994) and Berger and Udell (1995). However, it is in line with the empirical studies that focus on Europe (Harhoff & Körting, 1998; Hernández-Cánovas & Koëter-Kant, 2011; Howorth & Moro, 2012). The average amount of assets is 1,676,331 euros, while the average equity ratio is 28.9%, suggesting that the average firm is quite leveraged.

Table 2. Descriptive statistics																
Name	**Mean**	**Std. dev**	**Min**	**Max**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Overall margin	8.270	11.269	−34.9	202.2	1.000											
Total assets	1,674.8	3,935.1	5.1	40,818.6	−0.202	1.000										
Equity ratio	28.2	46.3	−995.1	100.0	−0.594	0.111	1.000									
Return on equity	35.9	74.9	−100.0	100.0	0.234	−0.111	−0.299	1.000								
Rating	7.2	1.3	4	11	−0.239	0.260	0.402	−0.059	1.000							
Short-term interest rate	1.6	0.7	0	4	0.111	−0.143	−0.083	0.058	0.102	1.000						
Short-term loan amount	137.7	1,417.6	0	6,540	0.025	0.050	0.004	−0.016	0.031	−0.063	1.000					
Long-term interest rate	0.8	0.9	0	4	0.270	−0.165	−0.214	0.073	0.251	0.210	0.023	1.000				
Long-term loan amount	1,161.7	3,832.2	0	8,110.0	0.044	0.120	−0.031	−0.034	−0.006	0.010	0.118	0.187	1.000			
Number of products	14.2	11.1	1	183	0.003	0.162	0.012	−0.051	−0.013	−0.048	0.074	0.058	0.084	1.000		
Cash management	0.6	0.5	0	1	−0.068	0.013	0.057	−0.064	−0.002	−0.031	−0.003	0.177	0.024	0.078	1.000	
Length	15.1	8.8	1	66	0.104	0.168	0.047	−0.058	−0.108	−0.028	0.028	−0.053	0.027	0.217	−0.098	1

Notes: This table presents the descriptive statistics of the sample. We report mean values, standard deviations and minimum and maximum values as well as Pearson correlations. Monetary values are displayed as thousands of euros.

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Figure 2. Findings.

Notes: Significance using bootstrapping procedure (500 samples). ***, ** and * denotes significance at the level 1, 5 and 10% level, respectively. Year- and bank-specific effects on the overall margin are included in the model.
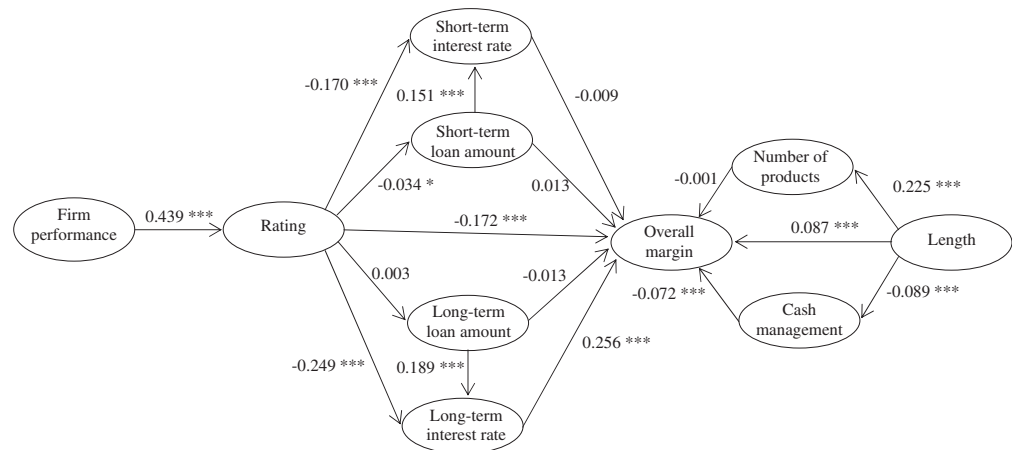
7. Analysis and results

To empirically examine the relationships proposed in Figure 1, we used a SEM. The results including all the links are reported in Figure 2.

In line with H1, the operating and financial performance of a firm appears to significantly impact on the internal rating it receives from a bank. The higher the total assets, the equity ratio and the return on equity, the better the firm's internal rating. In addition, we also find a significant negative relationship between a firm's internal rating and a bank's margin. Thus, H2a is also supported. Turning our attention to the amount and the price of short and long-term loans we find that only the price of long-term loans has the expected positive relationship with the bank's margin, whereas the price of short-term loans and the amount of both short-term and long-term loans is not significant. H2b is not supported and H2c is only partially supported. Interestingly, the internal rating is negatively and significantly associated with both the price of short-term and long-term loans, but does not seem to affect the amount of the loan. This finding indicates that banks account for a firm's risk by adjusting the interest rate charged, not by increasing or decreasing the loan amount. However, the amount of the loan does have a direct positive impact on the loan's price, which suggests that higher amounts of short-term as well as long-term loans entail higher interest rates.

The length of the relationship between the loan manager and the SME manager positively affects the bank's margin. This finding is in line with H3a and supports our argument that SMEs are, to a certain extent, trapped in a relationship with their bank due to information asymmetries (D'Auria, Foglia, & Marullo Reedtz, 1999; Farinha & Santos, 2002; Ongena & Smith, 2001) and that banks exploit this situation by charging higher prices and fees.

As far as other products and services provided by the bank are concerned, the length of the relationship has a positive and significant impact on the provision of additional products and services, which in turn does not have a significant impact on the bank's margin. This finding implies that banks can sell more products and services to their SME customers when they have a longer, more established relationship with them. However, banks are not able to increase their margin by providing these products. This finding is at odds with earlier results by Dietrich and Wanzenried (2011) and Valverde and Rodriguez Fernandez (2007), who suggest that diversification makes a positive contribution to a bank's profitability. Possibly, banks can seize the information collected in their relationship with the SME customer to determine the products or services that might be needed, but are unable to generate a margin because SME customers may obtain the same products and services from other banks. Consequently, banks must charge competitive prices, which reduces their margin.

Finally, we find that the length of the relationship has a negative and significant impact on the provision of cash management services, which in turn has a negative and significant impact on the bank's margin. H3c is therefore not supported. The negative link between the length of the relationship and the provision of cash management services indicates that SMEs that have a long relationship with their bank are less likely to obtain cash management services from it. One of the reasons for this unexpected finding might be that banks require hardly any information about the SME to be able to provide cash management services, because they do not have to assess the SME's creditworthiness or align the respective product or service with the SME's needs. While this makes it easier for banks to provide these services, it also makes it easier for SMEs to switch to an alternative bank that makes a more attractive offer. In addition, our findings suggest that the provision of cash management services is not profitable for these banks. Typically, they charge relatively low fees for these services, because monitoring the trend in a SME's cash flows and changes in that trend enables them to gain additional information about the SME and its performance, which they can then use for the lending decision as well as the provision of other products and services.

8. Discussion and conclusion

This research investigates the contribution of the different products and services provided to SMEs by small cooperative banks to their profit margin. We use data from 4,277 small and medium-sized firms' bank relationships in Finland from 2001 to 2005. We find that the internal rating given by a bank to a specific customer negatively affects the margin the bank generates. This negative relationship is mediated by the price of long-term loans: the better the internal rating, the lower the price of the long-term loan and the bank's margin. Interestingly, the relationship between internal ratings and the bank's margin is not explained by the price of short-term loans nor by the amount of short-term and long-term loans. Thus, even though banks rely on their internal rating to determine the price of short-term loans, the interest revenue generated from these loans does not increase their margin. This might be because short-term loans are revised and rolled over at regular intervals. Each time the loan is rolled over, the loan manager must assess the firm's most recent performance, which increases the costs of the personnel who must work on the loan and thereby reduces the bank's margin. The insignificant relationship between the internal rating and the loan amount suggests that banks primarily price the risk associated with a firm according to the interest rate charged, but not the amount lent. Firms with a poor internal rating would therefore be charged higher interest rates, but a poor internal rating would not reduce the size of the loan received.

The positive association of a bank's long-term relationship with a firm to its margin cannot be explained by the number of additional products and services provided to the SME either. Even though the length of the relationship significantly affects the number of products and services, the number of products and services does not affect the bank's margin. Thus, while a bank that has long-lasting relationships with its customers can provide a higher number of products and services, it does not benefit from these sales in the form of higher margins. However, the bank may be able to benefit from providing additional products and services by developing a more thorough understanding of the firm's financial and economic position and its strategic alignment. The additional information supports the bank in selecting the right firms to be its customers and the pricing of a bank's products and services (particularly loans) according to the risk profiles of firms. It can then sell firms additional products and services, which deepens their relationships. At the same time, the additional products and services sold do not decrease the bank's risk profile, this is because the product or service either does not bear any additional risk or because the bank only acts as an intermediary for the respective product or service.

Furthermore, we find a positive relationship between the length of a relationship between a bank and a firm and the bank's margin. However, this relationship is not mediated by the provision of cash management services. Rather, the length of the relationship is negatively associated with the provision of cash management, and the provision of cash management is negatively associated with the bank's margin. This finding suggests that cash management services are not profitable for banks

from a merely financial point of view. However, taking into consideration the information that can be gained by managing a firm's inflows and outflows of cash might help banks to strengthen their relationships with their customers. By being able to monitor a firm's cash flows daily, the bank increases its knowledge about the firm's business and its riskiness, which helps to determine adequate prices for the loans, while the selling of additional products and services will tie the firm closer to the bank. Thus, even though the provision of cash management services may reduce a bank's margin, the bank may benefit from these services by gaining insight into the firm.

Our findings suggest that only long-term loans contribute significantly to a bank's margin, whereas short-term loans and providing additional products and services do not affect the margin, in fact the provision of cash management services even reduces the bank's margin. From a merely financial point of view, one might argue that a small cooperative bank should concentrate on its core business, i.e. the provision of loans. However, by concentrating only on loans the bank would lose major sources of information about a firm; the bank's understanding of the firm's business and its risks would be reduced, which would negatively affect its ability to determine the firm's creditworthiness, the terms of the loan and the firm's need for additional products and services. Small cooperative banks should therefore not only consider the financial contribution of products and services when they decide on specialisation or diversification, but they should also take non-financial aspects, such as the information gained, into consideration.

Our research has some limitations that open-up the possibility for additional research. First, we use data from Finland, a context characterised by strong relational bonds that could affect the willingness of SME managers to change banks, thus increasing the opportunities for banks to exploit the relationships. Thus, it would be interesting to replicate the research in a different context, particularly in financial systems characterised by transaction lending and weaker links between actors. Second, we use data for the period from 2001 to 2005, thus before the financial crisis.[2] It would be interesting to replicate the study using data collected after 2008 to verify whether and how the financial crisis affected the banks' ability to generate a margin from their business relations with SME customers. However, Fahlenbrach, Prilmeier, and Stulz (2012) show that a bank's risk culture tends to persist over time thus making risky banks' performance sensitive to crises. In fact, one could examine whether the bank's excessive interest margins during the first years of this millennium allowed banks to develop their other banking services in a way that it generates positive margin in the current economic circumstances. Finally, we do not implement a detailed analysis of the impact of different products and services over and above loans and cash management services. Future research could investigate the impact of product and/or service diversification on the bank's margin in more detail.

Irrespective of its limitations, the study indicates that lending played a central role in the ability of small cooperative banks to generate a margin from SME customers. However, the financial services industry is facing new regulation (Payment services (PSD 2) – Directive (EU) 2015/2366) that will open new business opportunities, as well as competition, to the provision of non-interest products and services.

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Notes

1. Banks can use this approach only subject to approval from the Financial Supervisory Authority (FIN-FSA). Under the F-IRB approach, banks can use their own empirical model to estimate probabilities of default for individual firms.
2. In fact, we estimated the model by dividing the sample from 2001 to 2002 and 2003 to 2005 to examine the impact of the euro physical circulation on the bank's margin. Interestingly, we find that some the effects are stronger during the euro period. However, our main results remain unaltered.

References

Acharya, V. V., Hasan, I., & Saunders, A. (2006). Should banks be diversified? Evidence from individual bank loan portfolios. *The Journal of Business, 79*, 1355–1412. https://doi.org/10.1086/jb.2006.79.issue-3

Allen, L., & Jagtiani, J. (2000). The risk effects of combining banking, securities, and insurance activities. *Journal of Economics and Business, 52*, 485–497. https://doi.org/10.1016/S0148-6195(00)00033-3

Baas, T., & Schrooten, M. (2006). Relationship banking and SMEs: A theoretical analysis. *Small Business Economics, 27*, 127–137. https://doi.org/10.1007/s11187-006-0018-7

Berger, A. N., & Udell, G. F. (1995). Relationship lending and the lines of credit in small firm finance. *The Journal of Business, 68*, 351–381. https://doi.org/10.1086/jb.1995.68.issue-3

Berger, A. N., & Udell, G. F. (2006). A more complete conceptual framework for SME finance. *Journal of Banking & Finance, 30*, 2945–2966. https://doi.org/10.1016/j.jbankfin.2006.05.008

Binks, M., & Ennew, C. (1996). The impact of service quality and service characteristics on customer retention: Small business and their banks in the UK. *British Journal of Management, 7*, 219–230.

Blackwell, D. W., & Winters, D. B. (1997). Banking relationships and the effect of monitoring on loan pricing. *Journal of Financial Research, 20*, 275–289.

Brunner, A., Krahnen, J. P., & Weber, M. (2000). *Information production in credit relationships: On the role of internal ratings in commercial banking* (CFS Working Paper No 2000/10). Frankfurt an Main: Center for Financial Studies and der Johan Wolfgang Goethe-Universität.

Carter, D. A., McNulty, J. E., & Verbrugge, J. A. (2004). Do small banks have an advantage in lending? An examination of risk-adjusted yields on business loans at large and small banks. *Journal of Financial Services Research, 25*, 233–252. https://doi.org/10.1023/B:FINA.0000020663.21079.d2

Ciarrapico, A. M., & Cosci, S. (2011). European banks and cross-selling. *Applied Economics Letters, 18*, 555–559. https://doi.org/10.1080/13504851003761749

Cipolla, C. M. (1994). Uomini Duri. In C. M. Cipolla (Ed.), *Tre storie extravaganti* (pp. 1–91). Bologna: Il Mulino.

D'Auria, C., Foglia, A., & Marullo Reedtz, P. (1999). Bank interest rates and credit relationships in Italy. *Journal of Banking & Finance, 23*, 1067–1093. https://doi.org/10.1016/S0378-4266(98)00131-9

Dell'Ariccia, G., & Marquez, R. (2004). Information and bank credit allocation. *Journal of Financial Economics, 72*, 185–214. https://doi.org/10.1016/S0304-405X(03)00210-1

Demsetz, R. S., & Strahan, P. E. (1997). Diversification. Size, and risk al bank holding companies. *Journal of Money Credit and Banking, 29*, 300–343. https://doi.org/10.2307/2953695

Deng, S. E. Elyasiani, E., & Mao, C. X. (2007). Diversification and the cost of debt of bank holding companies? *Journal of Banking & Finance, 31*, 2453–2473. https://doi.org/10.1016/j.jbankfin.2006.10.024

DeYoung, R., Evanoff, D., & Molyneux, P. (2009). Mergers and acquisitions of financial institutions: A review of the post-2000 literature. *Journal of Financial Services Research, 36*, 87–110. https://doi.org/10.1007/s10693-009-0066-7

DeYoung, R., & Roland, K. P. (2001). Product mix and earnings volatility at commercial banks: Evidence from a degree of total leverage model. *Journal of Financial Intermediation, 10*, 54–84. https://doi.org/10.1006/jfin.2000.0305

Dietrich, A., & Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions & Money, 21*, 307–327. https://doi.org/10.1016/j.intfin.2010.11.002

Elsas, R., & Krahnen, J. P. (1998). Is relationship lending special? Evidence from credit data in Germany. *Journal of Banking & Finance, 22*, 1283–1316. https://doi.org/10.1016/S0378-4266(98)00063-6

Ergungor, O. E. (2005). The profitability of bank–borrower relationships. *Journal of Financial Intermediation, 14*, 485–512. https://doi.org/10.1016/j.jfi.2004.09.002

Fahlenbrach, R., Prilmeier, R., & Stulz, R. M. (2012). This time is the same: Using bank performance in 1998 to explain bank performance during the recent financial crisis. *The Journal of Finance, 67*, 2139–2185. https://doi.org/10.1111/j.1540-6261.2012.01783.x

Farinha, L. A., & Santos, J. A. C. (2002). Switching from single to multiple bank lending relationships: Determinants and implications. *Journal of Financial Intermediation, 11*, 124–151. https://doi.org/10.1006/jfin.2001.0328

Fomby, T. B., Gunther, J. W., & Hu, J. (2012). Return dependence and the limits of product diversification in financial firms. *Journal of Money Credit and Banking, 44*, 1151–1183. https://doi.org/10.1111/j.1538-4616.2012.00526.x

Harhoff, D., & Körting, T. (1998). Lending relationships in Germany – Empirical evidence from survey data. *Journal of Banking & Finance, 22*, 1317–1353. https://doi.org/10.1016/S0378-4266(98)00061-2

Hayden, E., Porath, D., & von Westernhagen, N. (2007). Does diversification improve the performance of German banks? Evidence from individual bank loan portfolios. *Journal of Financial Service Research, 32*, 123–140. https://doi.org/10.1007/s10693-007-0017-0

Hernández-Cánovas, G., & Koëter-Kant, J. (2011). SME financing in Europe: Cross-country determinants of bank loan maturity. *International Small Business Journal, 29*, 489–507. https://doi.org/10.1177/0266242611402569

Howorth, C., & Moro, A. (2012). Trustworthiness and the interest rates: An empirical study of SMEs and small banks in Italy. *Small Business Economics, 39*, 161–177. https://doi.org/10.1007/s11187-010-9285-4

Howorth, C., Peel, M. J., & Wilson, N. (2003). An examination of the factors associated with bank switching in the U.K. small firm sector. *Small Business Economics, 20*, 305–317. https://doi.org/10.1023/A:1022963226621

Köhler, M. (2014). Does non-interest income make banks more risky? Retail- versus investment-oriented banks. *Review of Financial Economics, 23*, 182–193. https://doi.org/10.1016/j.rfe.2014.08.001

Krahnen, J. P., & Weber, M. (2001). Generally accepted rating principles: A primer. *Journal of Banking and Finance, 25*, 3–23. https://doi.org/10.1016/S0378-4266(00)00115-1

Laevena, L., & Levine, R. (2007). Is there a diversification discount in financial conglomerates? *Journal of Financial Economics, 85*, 331–367. https://doi.org/10.1016/j.jfineco.2005.06.001

Lepetit, L., Nys, E., & Rous, P., Tarazi, A. (2008). Bank income structure and risk: An empirical analysis of European banks. *Journal of Banking & Finance, 32*, 1452–1467. https://doi.org/10.1016/j.jbankfin.2007.12.002

Lozano-Vivas, A., Kumbhakar, S. C., Fethi, M. D., & Shaban, M. (2011). Consolidation in the European banking industry: How effective is it? *Journal of Productivity Analysis, 36*, 247–261. https://doi.org/10.1007/s11123-011-0212-8

Machauer, A., & Weber, M. (1998). Bank behavior based on internal credit ratings of borrowers. *Journal of Banking & Finance, 22*, 1355–1383.

Mercieca, S., Schaeck, K., & Wolfe, S. (2007). Small European banks: Benefits from diversification. *Journal of Banking & Finance, 31*, 1975–1998. https://doi.org/10.1016/j.jbankfin.2007.01.004

Mergaerts, F., & Vander Vennet, R. (2016). Business models and bank performance: A long-term perspective. *Journal of Financial Stability, 22*, 57–75. https://doi.org/10.1016/j.jfs.2015.12.002

Mols, N. P., Nikolaj, D., Bukh, P., & Blenker, P. (1997). European corporate customers' choice of domestic cash management banks. *International Journal of Bank Marketing, 15*, 255–263.

Moro, A., Fink, M. (2013). Loan manager trust and credit access for SMEs. *Journal of Banking & Finance, 37*, 927–936. https://doi.org/10.1016/j.jbankfin.2012.10.023

Ongena, S., & Smith, D. C. (2001). The duration of bank relationships. *Journal of Financial Economics, 61*, 449–475. https://doi.org/10.1016/S0304-405X(01)00069-1

Peltoniemi, J. (2007). The benefits of relationship banking: Evidence from small business financing in Finland. *Journal of Financial Services Research, 31*, 153–171. https://doi.org/10.1007/s10693-007-0009-0

Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. *Journal of Finance, 49*, 3–37. https://doi.org/10.1111/j.1540-6261.1994.tb04418.x

Petersen, M. A., & Rajan, R. G. (1995). The effect of credit market competition on lending relationship. *Quarterly Journal of Economics, 110*, 407–443. https://doi.org/10.2307/2118445

Stein, J. C. (2002). Information production and capital allocation: Decentralised versus hierarchical firms. *The Journal of Finance, 57*, 1891–1921. https://doi.org/10.1111/0022-1082.00483

Stiroh, K. J. (2004). Diversification in banking: Is noninterest income the answer? *Journal of Money Credit and Banking, 36*, 853–882. https://doi.org/10.1353/mcb.2004.0076

Strahan, P. E., & Weston, J. P. (1998). Small business lending and the changing structure of the banking industry. *Journal of Banking & Finance, 22*, 821–845. https://doi.org/10.1016/S0378-4266(98)00010-7

Treacy, W. F., & Carey, M. (2000). Credit risk rating systems at large US banks. *Journal of Banking & Finance, 24*, 167–201.

Uchida, H. (2011). What do banks evaluate when they screen borrowers? Soft information, hard information and collateral. *Journal of Financial Services Research, 40*, 29–48.

Valverde, S. C., & Rodriguez Fernandez, F. (2007). The determinants of bank margins in European banking. *Journal of Banking & Finance, 31*, 2043–2063. https://doi.org/10.1016/j.jbankfin.2006.06.017

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