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October 2011

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ABSTRACT

Funding Self-Employment: The Role of Consumer Credit[*]

This paper investigates whether self-employed households use consumer loans – in particular instalment loans and overdrafts – to finance business activities. Controlling for financial and non-financial household variables we show that self-employed households particularly use personal overdrafts significantly more often than employee households. When analyzing the correlation between consumer loan take-ups and consumption of self-employed in comparison to employee households, we find first evidence that overdrafts are used by self-employed to finance their business as well. This indicates that intermingling constitutes a financing strategy when regular business loans might not be accessible.

JEL Classification: G32, D12, D14

Keywords: small business finance, consumer credit, financial intermingling

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1. Introduction

The availability of external finance is a crucial success factor and, if impossible to obtain, it poses an obstacle for small and micro enterprises around the world. A growing literature addresses questions pertaining to funding issues and proposes solutions how credit availability can be ensured within this sector (Hancock and Wilcox, 1998; Harhoff and Körting, 1998; Bitler, Robb and Wolken, 2001; Berger and Udell, 2003). Unlike large corporations, small and micro enterprises cannot rely on a set of funding sources composed of customized business loans (Ang, 1992; Petty and Bygrave, 1993). This is mainly due to two reasons: (i) because of low profitability prospects, banks have not designed loan products tailored to the specific needs of self-employed households running small and micro businesses and (ii) banks avoid high risk profiles – a legitimate stance given the informational opacity of these kinds of businesses (see inter alia Stiglitz and Weiss, 1981). According to Berger and Udell (1998), informational opacity is, therefore, 'perhaps the most important characteristic defining small business finance'.

The purpose of this study is to examine whether self-employed households make use of consumer instead of business loans in order to finance the cash needs of their businesses. This phenomenon is known as financial intermingling of household and business resources, which is defined as 'the use of household assets for the support of the business or the use of business assets (other than wage and salary payments) for support of the household' (Yilmazer and Schrank, 2006). Examples of intermingling are direct loans from the household to the business, or the use of a business asset for household purposes (Haynes et al., 1999).

Assuming that the use of consumer credit should generally be positively related to household consumption, we show that this is not always the case for households in which the household head is self-employed. We interpret this behaviour as a re-direction of funds from the household to the business. Two types of consumer loans are considered: personal overdrafts and personal instalment loans.[3] Together with mortgage debt and credit card debt, consumer credit makes up the bulk of debt sources that most households accumulate (Yilmazer and DeVaney, 2005).

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[3] For notational brevity, when speaking of personal overdrafts and personal instalment loans, respectively we simply refer to 'overdrafts' and 'instalment loans' below. Business loans are explicitly exluded from these considerations.

Previous research in this field revealed under what conditions intermingling takes place. Still, little is known about the means used for it. The present study aims to close this research gap by examining the role of consumer credit in the process of intermingling. More specifically, we aim to find out whether consumer loans are used to finance business activities in self-employed households. The data sources previously analysed to quantify the extent of intermingling are not suitable for determining the role of consumer credit. For example, Haynes and Avery (1996) find fault that 'unfortunately, loan types were not identified in the data set used so far'. Furthermore, as Parker (2004) notes, to date most of the evidence delivered on non-standard forms of finance is anecdotal. Academic research is sporadic. By using a different data set – the German Survey of Income and Consumption (EVS) – this study is the first to examine intermingling by means of funds obtained through consumer credit. Furthermore, it links intermingling to different loan types, thus extending the present literature on this topic.

We first examine how the self-employment status influences consumer loan take-up behaviour. We find that self-employment is an important determinant of personal overdraft use, even after controlling for a variety of household characteristics. Second, by estimating a consumption function for each household, the relationship between use and source of household funds is analysed, comparing self-employed and employee households; the conjecture being that all consumer loans that were not used for consumption must have been directed toward the business. As we show, self-employed households seem to use, in particular, overdrafts to finance their business.

The observed financing behaviour could be understood as a characteristic of small and micro businesses. However, this type of 'detouring finance' has three consequences. First, business owners are not able to establish a credit history. Second, consumer loans lack features that are important for self-employed. Third, these kind of self-employed households face additional financial and liability risks.

The rest of this paper is structured as follows. Section 2 reviews previous empirical research results and outlines our research agenda. Section 3 details the methodology.

Section 4 presents the results of the empirical analysis. Section 5 reviews the limits of the study and makes recommendations for future research. Finally, conclusions are provided in section 6.

2. Previous Research and Research Question

Small and micro businesses are generally neither publicly traded nor required to release financial information. This lack of data is probably the main reason why small business finance is 'one of the most under researched areas in finance' (Berger and Udell, 1998). In the U.S., research is growing due to the development of several different data sets - most importantly, the National Survey of Small Business Finances (NSSBF). It provides information on the income situation of small businesses (less than 500 employees) as well as the availability of different types of external financing. In Germany information about ways how small businesses make use of external financing is now provided by a MSME panel of the state owned bank 'Kreditanstalt für Wiederaufbau' (KfW, 2007). Nevertheless, there is no reliable information addressing our research question of how financial institutions book the various types of loans that they make to firms. Therefore, Samolyk (1997) concludes that 'although it is generally believed that loans booked as consumer loans are often used to finance small business activities, the [existing] survey data cannot be used to quantify the extent to which this is the case'.

In this section we provide a short overview what is known about entrepreneurial finance in Germany, where we find a way to indirectly analyse our research question with existing data. Next we provide an overview of previous research on financial intermingling and on determinants of consumer loan demands. The third subsection motivates our research question.

2.1. Entrepreneurial Finance

Information about the total number of self-employed in Germany can be found in the German micro-census (Mikrozensus), which is a representative 1% sample drawn every year, in early spring, from the total population of Germany (see, e.g., Piorkowsky 2008). The micro-census shows that in 2003, the year that will be further analysed with respect to consumer loans, around 3.8 million persons were self-employed in Germany. It is further known that around 90% of all businesses of the

self-employed have a yearly turnover of less than €1m, 70% of them of less than €100,000 (see Piorkowsky, 2008 and Wallau, 2006). In 2003, the same year, the Institut für Mittelstandsforschung (IfM, 2007) observes around 500,000 new start-ups; approximately half were started by unemployed individuals who were financially supported by the government (see Caliendo and Kritikos, 2010).[4] Calculating the number of start-ups to the total number of self-employed means that among the 3.8 million self-employed (the relevant benchmark for this analysis), the total number of start-ups was about 13%. Moreover, a little less than 7% of all self-employed were start-ups out of unemployment.

According to an SME-panel of the KfW, 75% of all self-employed did not use any external business financing (KfW 2007). Further, it was found that, in almost all cases, the 25% needing external funds preferred loans and overdrafts. Venture capital plays a negligible role. In every second case, loan volumes were below €25,000 meaning that around 13% of all self-employed in Germany (about 500,000 of the 3.8 million) operate with loans smaller than €25,000. Moreover, Kritikos and Kneiding (2010) show that there is a linear relationship between the loan amount requested and the probability of approval, with approval rates below 30 per cent for business loans of €5,000, and approval rates reaching 75 per cent for requests of business loan of €50,000. However, very little is known about the sources that the self-employed use, in particular when they borrow capital below €25,000 having faces a rejection for a business loan. There could be three sources of loans: First, Berger and Udell (1998) emphasize the importance of private loans and supplier credits for this segment. Second, banks might be willing to offer consumer loans below €25,000, or, third, the self-employed try to reduce their funding requirements.

2.2. Previous Research

Many researchers ascertain that proprietorships and partnerships tend to intermingle business and personal finances, which renders accurate measurement of their finances almost impossible (Bradbury, 1996; Mester, 1997; Samolyk, 1997; Bitler, Robb and Wolken, 2001). Most of this evidence is anecdotal, though, and empirical analysis is scarce (Haynes and Avery, 1996). For the case of family-owned

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[4] These support schemes aim to cover basic costs of living and social security contributions during the initial stages of self-employment, when the business might not be able to yield adequate income (for more details about these start-ups out of unemployment, see Caliendo and Kritikos, 2010).

businesses, Haynes et al. (1999) use US data from a national survey on 673 business-owning households. They find that the finances of the business and the family seem to be 'inextricably intertwined'. According to their study, intermingling occurs especially often in sole proprietorships; when the business owes money to financial institutions and when the owner is older, more experienced, and without children in the household. Haynes and Muske (2003) and Muske, Fitzgerald and Haynes (2003) deepen this research by analysing specific subsets of the data utilized by Haynes et al. (1999). Finally, Yilmazer and Schrank (2006), also using US data, compare the determinants of intermingling in family and non-family businesses. They conclude that intermingling of household and business financial resources is probably more influenced by business characteristics and household net worth than by other household characteristics or whether a business is a family business.

The determinants of consumer loan demand by households are analysed in a series of studies (Yilmazer and DeVaney, 2005; Crook, 2001; Manrique and Ojah, 2004). Their primary focus, however, is on the interrelation of loan demand and credit constraints or the development of household debt over the life cycle. The question of intermingling is not treated in any study. Though Yilmazer and DeVaney (2005) employ a variable that captured self-employment, they did not further interpret its interactions with consumer loan demand.

In this context it should also be emphasized that, as Yilmazer and Schrank (2006) put it, financial intermingling is a resource decision, and must be separated from bootstrapping. Bootstrapping describes a set of strategies used, especially by start-up companies, to manage liquidity, such as asking for financial support from friends and family instead of banks or other traditional sources (Freear, Sohl and Wetzel, 1995), or as reducing the needs for financing to a minimum by securing resources at little cost or by obtaining resources from the household (Winborg and Landstrom, 2001). In contrast to this, intermingling may continue longer than just during the start-up period. Furthermore, intermingling goes beyond bootstrapping as it can include 'direct transfers of cash in the form of gifts or loans or credit card purchases' (Yilmazer and Schrank, 2006). To the best of our knowledge, no study analyses what role consumer credit plays in the context of intermingling.

2.3. Research Agenda and Background Information

The following research question is addressed in this article: Do we find evidence that self-employed households use consumer loans, in particular instalment loans and overdrafts, to finance their business activities?
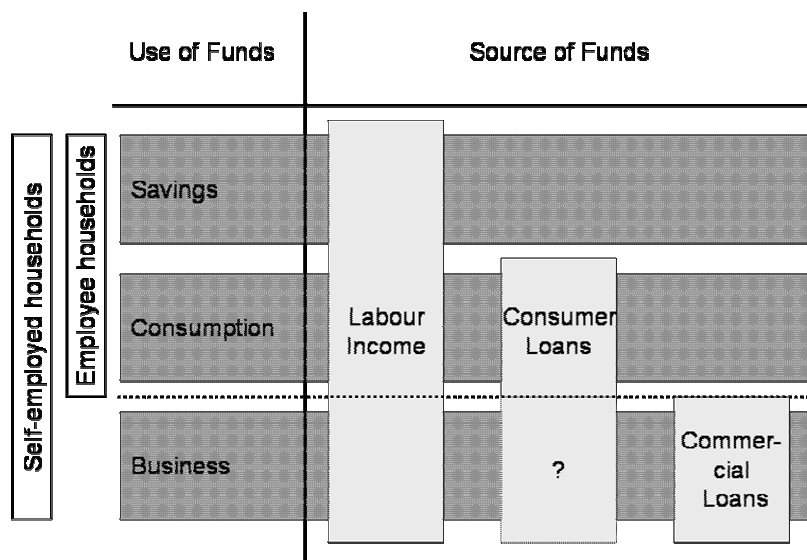

Figure 1: Source and Use of Funds in Employee and Self-Employed Households

In order to answer this question, we first analyse the use of consumer credit by self-employed and employee households. This univariate comparison delivers a first picture of financing differences across both groups. In a second step we approach the question of intermingling using two models. The first model includes consumer loan take-up as the dependent variable and the household's employment status as the independent variable, controlling for various household characteristics. This procedure gives first evidence on how the use of consumer loans varies across comparable household types that differ only in their employment status. The second analysis establishes a consumption function for both household types that is determined *inter alia* by consumer loan take-ups. It is based on a classic consumption-savings model (Browning and Crossley, 2001) and rests on the assumption that all funds that have been generated from consumer credit and were not used for consumptive purposes are transferred to the business (see Figure 1). This also means that we made the assumption that consumer loans were not used for savings or in the bond market (as these are yielding lower interest payments than consumer loans cost in terms of interest payment).[5]

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[5] As we will explain in the next section, the interest rates are between 5% and 10% lower in the bond market when compared to the interest rates of instalment loans or overdrafts.

In this context, it is necessary to clarify why, on the one hand, consumer loans are suited to substitute the use of the commercial loans and why, on the other hand, the use of consumer loans is an inferior solution to self-employed when compared to commercial loans. To do so we need to present the characteristics of overdrafts and instalment loans in Germany.[6] Both loan types have some common characteristics: they are originally designed to pre-finance the purchase of consumer goods. At the same time only private persons with the intention to purchase items for their private use are entitled to be the contracting party of a consumer loan. Accordingly, persons living in private households, who have to prove regular earnings (for instance from a position in regular employment), are the signing borrowers of these contracts. If the borrowers have no regular income, they need a co-signer, who must prove regular income, to guarantee of payment of the loan.

Further, there are some characteristics that are crucial to better understand why self-employed persons might choose these two types of consumer loans for business purposes. Instalment loans are typically designed as medium term loans. They have a maximum maturity of 6 years and, in most cases, do not exceed €25,000. This is the range of loan volumes[7] that – as mentioned in section 2.1 – is most difficult to access for business purposes. Consumer loans tend to be tied to the purchase of a specific product (e.g., a kitchen or a car) and have to be repaid in regular instalments. Interest rates are usually slightly higher than those of business loans, with an averge rate 5% above the bond market interest rate.[8]

Overdrafts are actually meant to be short-term, but can be extended into a long term loan quite easily, as long as the central prerequisite of a regular monthly income is met. Because there is no agreement on the repayment frequency, there is also no external pressure to do so. The overdraft has, thus, neither a maximum maturity, nor any regular instalment, nor is it tied to a specified objective. The bank calculates the maximum loan amount based on the monthly net income, which is then multiplied by a certain factor (around 3 if the monthly net income can be documented

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[6] Information on the characteristics of overdrafts and instalment loans relies on the very detailed description of Evers (2002).

[7] see Schäfer and Hölscher (2010).

[8] Loans via credit cards are designed in a very similar way as instalment loans. The major difference is that the interest rates of credit card loans are about 10% higher than the interest rates of classical instalment loans. However, the prerequisites for getting access to a loan via a credit card are somehow weaker than for an instalment loan and these loans are not tied to the purchase of a specific product.

retrospectively for a certain time period).[9] If net incomes change the maximum loan amount is adjusted immediately, in particular when the income becomes lower. Interest rates are ranging between those of instalment loans and of credit card loans, and are usually about 10% above the bond market rate.

The consequences that arise from this type of 'detouring finance' have some important implications that should be considered here. First, there are some legal issues. German civil law (§§ 13, 491 BGB) excludes the use of consumer loans for business or self-employment purposes. Thus, if detected, self-employed persons might face a dismissal without notice or legal consequences if the misuse of consumer loans is proven. Second, if self-employed households use only consumer loans for financing their business, then they are not recognized by banks as entrepreneurs and, therefore, are not able to establish a credit history. This may not be a problem during the start-up phase, but it will result in severe restrictions when larger credit financed investments should be made. Third, consumer loans are not geared to the exigencies of small business owners. They lack features that might be important. Even worse, consumer loans can be called in by the bank more easily than commercial loans. In particular, for overdrafts banks will automatically recall the loan (usually on very short notice of 30 days) once the borrower's regular income is not registered for two or three consecutive months.[10] Forth, liability for consumer loans tends to be unlimited as opposed to limited liability regulations that could be applied to commercial loans. Last but not least, as Yilmazer and Schrank (2006) state, it is likely that loans from household to business are less well documented and less likely to be repaid than other loans. It is also the lack of a written loan agreement that puts the household in a riskier position.

Therefore, this kind of intermingling of resources may put the household at additional financial and liability risks. At the same time, it also becomes clear why it is so difficult to directly analyse whether consumer loans are used for business purposes: no self-employed household will properly document an illegal procedure. This is why we need to approach this research question indirectly.

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[9] For instance, a person with a regular monthly net income of 3,000 Euros will usually receive a overdraft of 9,000 Euros. For more details see http://www.piloh.de/dispo-kredit-berechnung.html

[10] See No. 26,1 of the "standard business conditions of banks. According to §§ 488, 489 BGB (the German civil law) offers reason to reduce the period of cancellation to less than 30 days.

3. Methodology

3.1. Data Source

We base our analysis on the German 'Survey of Income and Consumption' *(Einkommens- und Verbrauchsstichprobe, EVS)*, a representative survey containing detailed information on income and consumption of the total German population. Since 1964, the EVS is conducted every five years and comprises of about 0.2% of all German households (75,000). It can partly be compared to the US Survey of Consumer Finances (SCF). It is a quota sample, i.e. households are selected according to a quota plan. The population is stratified according to certain characteristics for each of the 16 German states, the criteria being type of household, social situation of the head of household and net household income. We use the 2003 survey.[11]

The EVS asks several questions with regard to the use of different types of consumer loans. The questions utilised for assessing the use of overdrafts and instalment loans are part of a so-called 'book of household accounts' where all household members had to enter any expenditures made. Interest payments and principal payments had to be put down separately. The survey did not ask for mortgage loans or lines of credit backed by equity in the primary residence, which is why this study only considers overdrafts and instalment loans.

The EVS data has several major advantages. In addition to delivering a representative picture of household finances in Germany, this data set is arguably more reliable than tax statistics, which regularly suffer from underreporting problems (Feldman and Slemrod, 2007; Hamilton, 2000; Eardley and Corden, 1996). Furthermore, by collecting data on loan take-ups and consumption over a quarter, the EVS survey design permits a more direct measurement of intermingling than the SCF survey, which captures this circumstance rather imprecisely (e.g., by asking whether the business owed money to the household). This problem is noted by Yilmazer and Schrank (2006), who point out that the SCF survey data might as well be a measure of delayed repayment of loans or withheld salaries, and not necessarily of intermingling.

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[11] A detailed description of the EVS can be found in Statistisches Bundesamt (2005).

The EVS survey is designed to collect data on the private consumption of German households. As the self-employed tend to intermingle private and business finances (which coherently results in a smooth transition in the perception of 'private' and 'business' loans), we use the EVS data to reveal these connections. An important caveat is the fact that the EVS does not contain variables describing the entrepreneur's business. Hence, our study is of an explorative nature, trying to shed light on this rather understudied borderland between private and business finance.

3.2. Sample Selection and Descriptive Statistics

There are around 43,000 households in the sample, of which approximately 8,650 are based in Eastern Germany. For the purpose of this study, a subsample was created comprising 1,954 self-employed and 25,663 employee households (including civil servants and blue-collar workers).[12] This classification is based on the social situation of the head of household, i.e. the person who earns the main income within the household. Within this sample, self-employment is concentrated on services (55.8%), construction (13.8%), trade (8.1%), credit and insurance industry (6.1%).

Table 1 provides the means of financial and non-financial characteristics for employee and self-employed households. The table reveals important differences between households in the two different employment states (significant differences between the two groups are indicated with an asterisk). Self-employed households have a higher average income[13] (see Fairlie, 2005; Parker, 1999 for similar findings; the reverse relation is detected by Hamilton, 2000), with more financial and non-financial assets than employee households. Furthermore, employee households consume less (quarterly expenditures on consumption amount to €8,400 (median €7,414) compared to €9,610 (median €8,134) for self-employed households). Significant differences also emerge for the use of consumer loans, which are further detailed in Section 4.1. The household heads of self-employed households are, on average, 3 years older than their counterparts from employee households; 39% of

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[12] Unemployed, students, and pensioners are excluded as our analysis is restricted to the working population. Thus, the sample proportion of the self-employed is 7.0%. A larger sample would reduce sampling fluctuations; alternatively, one could draw a stratified sample from the employee category and retain all the observations in the self-employed group (cf. Rees and Shah, 1986). For reasons of accuracy, we retain the original sample size.

[13] The median of €14,392 is slightly lower than the value of €14,583 for employee households. This is consistent with the literature review on income differentials between wage employment and self-employment conducted by Van Praag and Versloot (2007).

them hold a college education compared to only 19% in an employee position. Female household heads are more likely to be present in employee households (31%) compared to self-employed households (23%), which is consistent with the general trend that there are far fewer female than male self-employed persons in Germany (for a risk related explanation of this finding, see Caliendo, Fossen and Kritikos (2009).

3.3. Measurement Issues

Previous studies on intermingling were based on data sets that allowed for a direct measurement of intermingling (Haynes et al.; 1999, Muske et al., 2003; Haynes and Muske, 2003; Yilmazer and Schrank, 2006). Respondents had to indicate if the household owed any money to the business or vice versa. As the present data set does not include this kind of questions, our definition of intermingling is of an indirect nature. Most importantly, it is based on observed behaviour instead of statements made by interviewees.

Intermingling is a two way street (Yilmazer and Schrank, 2006): resources can be transferred between household and business. Generally, it is found that the greatest incidence of intermingling is of the household-to-business type (Haynes et al., 1999) which this study focuses upon. Many researchers distinguish between family and non-family businesses, the definition of this term being widely inconsistent across the literature (a comprehensive overview of different definitions is provided by Sharma, 2004). Yilmazer and Schrank (2006) state that intermingling behaviour between family and non-family businesses is fairly similar. As the EVS data set does not allow for this kind of discrimination, this study will only focus on the household's employment status. Variable definitions and sample means as well as standard deviations are provided in Table 1.

Table 1: Descriptive Statistics

Variable	Employees (N=25,663)		Self-employed (N=1,954)	
	Mean	Std. Dev.	Mean	Std. Dev.
Financial Characteristics				
LOGINCOME (log of quarterly gross household	15.88***[b]	8.04	17.42	11.53

income, in thousands of €)				
LOGFINASSET (log of total household financial assets, in thousands of €)	38.75***[b]	61.28	74.09	142.08
LOGNONFIN (log of total household non-financial assets in thousands of €)	147.61***[b]	247.76	288.76	616.59
CONSUMPT (total quarterly household consumption, in thousands of €)	8.40***[b]	–	9.61	6.71
INSTLOAN (usage of instalment loan(s) within household; 0 = no, 1 = yes)	0.21***[a]	–	0.14	–
OVDRFT (usage of overdraft(s) within household; 0 = no, 1 = yes)	0.33***[a]	–	0.42	–
QUINTINST (amount of quarterly interests paid on instalment loans, in €)	12.55***[b]	78.94	20.62	159.93
QUINTOV (amount of quarterly interests paid on overdrafts, in €)	14.62***[b]	59.66	34.05	137.93
Non-Financial Characteristics				
AGE (age of household head)	43.52***[b]	9.56	46.35	9.46
HHSIZE (number of household members)	2.73***[b]	1.27	2.85	1.39
REGION (0 = West Germany, 1 = East Germany)	0.20***[a]	–	0.14	–
FEMALE (household head female; 0 = no, 1 = yes)	0.31***[a]	–	0.23	–
MARRIED (0 = household head not married, 1 = married)	0.66[a]	–	0.66	–
GERMAN (0 = household head not German, 1 = German)	0.98[a]	–	0.98	–
COLLEGE (0 = household head has no college education, 1 = has college education)	0.19***[a]	–	0.39	–

*** significant at a 0.1% level   ** significant at a 1% level   * significant at a 5% level

[a] Chi-Square test   [b] t-test

4. Results

4.1. Incidence of Consumer Credit Use

The use of consumer credit is measured as a dummy variable indicating if the household was using either an instalment loan or an overdraft at the time of the survey. The data we use only details the average interest paid per quarter and does not contain information about the amount of the loan. Imputing the overall loan amount from this information would need a series of assumptions that would probably not hold true in reality, which is why we avoid using this approach.

Variables were tested for independence of the two groups of self-employed and employee households (see Table 1). We find that self-employed households use overdrafts more often and to a greater extent than employee households, whereas instalment loans are more frequently used by employee households. These differences are statistically highly significant, as evidenced by the t-test and chi-square test. When comparing these results to previous findings, it is noteworthy that the higher loan amounts of self-employed households fall in line with the conjectures of Haynes and Avery (1996).

The fact that self-employed households show a palpable preference for overdrafts might be explained by the advantage that overdrafts are - as shown in section 2.3 - more flexible than instalment loans and therefore might be more useful for the exigencies that day-to-day business poses on self-employed household. However, the conceivable explanations for the observed deviations between self-employed and employee households are manifold. For example, the higher use of overdrafts could be explained by the higher mean income of self-employed households (cf. Table 1). The same reasoning may hold for the higher loan amounts that are drawn by self-employed households. Consequently, it is necessary to control for different household characteristics in order to find out if loan take-up is significantly correlated to employment status. The next section addresses this question.

4.2. Evidence of Household-to-Business Intermingling

4.2.1. Determinants of loan usage

The first analysis is based on a logit regression model in which consumer loan take-up is modelled as a function of the household's employment status. Control variables

are derived from a series of previous studies on loan use by households (Haynes and Avery, 1996; Manrique and Ojah, 2004; Yilmazer and DeVaney, 2005; Crook, 2001), and can be split up into financial and non-financial variables. They are comprised of household income, age and age-squared of the household head, marital status, education, gender, nationality, household size, and geographical region.

Two separate regressions are run in order to explain the use of (1) overdrafts, and (2) instalment loans:

$$(1)\ Pr(OVDRFT) = \quad \alpha_0 + \beta\ SELFEMP + \sum_{i=controls} \chi_i control_i + \varepsilon$$

$$(2)\ Pr(INSTLOAN) = \quad \alpha_0 + \beta\ SELFEMP + \sum_{i=controls} \chi_i control_i + \varepsilon$$

Effects arising from heteroskedasticity are mitigated by basing the estimates on robust standard errors. Low bivariate correlations between the independent variables indicate absence of multicollinearity. Regression results are presented in Table 2.

How does employment status affect debt holdings? The self-employment dummy shows a significantly positive effect only on the use of overdrafts. The corresponding logit of 0.599 translates into an increase of 82% in the odds ratio of loan take-up when the household's status changes from regular to self-employment. This finding supports the intermingling hypothesis, as self-employment remains an important determinant of overdraft use, even after controlling for a variety of household characteristics.

Table 2: Logit Estimates of Factors Determining Consumer Loan Use

	OVDRFT	INSTLOAN
LOGINCOME	0.0249***	0.034***
	(0.0023)	(0.003)
LOGFINASSET	-0.019***	-0.051***
	(0.0032)	(0.003)
LOGNONFIN	-0.001***	-0.004***
	(0.0004)	(0.001)
AGE	0.080***	0.128***

	(0.012)	(0.015)
AGE2	-0.121***	-0.176***
	(0.0151)	(0.018)
HHSIZE	0.069***	0.009
	(0.014)	(0.017)
REGION	-0.148***	0.307***
	(0.034)	(0.038)
MARRIED	-0.125***	0.179***
	(0.038)	(0.047)
COLLEGE	-0.064	-0.327***
	(0.035)	(0.044)
FEMALE	0.0251	-0.046
	(0.032)	(0.038)
GERMAN	0.052	0.002
	(0.101)	(0.116)
SELFEMP	**0.599*****	**-0.078**
	(0.053)	**(0.072)**
Constant	-1.954***	-3.297***
	(0.254)	(0.310)
Pseudo R²	0.037	0.080
Observations	27,330	27,448

Robust standard errors in parentheses

*** significant at a 0.1% level   ** significant at a 1% level   * significant at a 5% level

It is noteworthy that both household types show no significant discrepancy in the use of instalment loans. The notion arises that intermingling might be concentrated on overdrafts, as their utilisation is not tied to any pre-specified conditions as explained before. Consequently, self-employed households seem to take advantage of the inherent flexibility that overdrafts offer.

The effect of financial household characteristics on loan use is consistent across all of the regressions and is consistent with previous findings for the most part. Household income exerts a positive influence on consumer loan take-ups, as found by Crook (2001), Manrique and Ojah (2004), and Yilmazer and DeVaney (2005).

Financial and non-financial assets are negatively associated to holding consumer debt, with a small coefficient for non-financial assets indicating a negligible effect of this variable. The first result confirms the findings of Crook (2001), while the latter is not underpinned by previous research. Yilmazer and DeVaney (2005) and Crook (2001) detect a positive relation between non-financial assets and consumer debt holdings.

With regard to non-financial household characteristics, the results show some deviations from previous studies. Age of the household head is positively correlated to holding consumer debt, whereas the negative sign of age-squared indicates a below-average trend. This is corroborated by Yilmazer and DeVaney (2005), but runs counter to Manrique and Ojah (2004). Household size positively influences the holding of overdrafts, but has no significant bearing on instalment loans or both loan types simultaneously. Manrique and Ojah (2004), in turn, also observe a positive influence of household size on holding consumer debt.

Married household heads show a higher probability of holding instalment loans, while the inverse relation is valid for overdrafts. Compared to household heads without a college education, those with a college education are less likely to hold instalment loans or both loan types simultaneously. This effect of education is also observed by Manrique and Ojah (2004) and Yilmazer and DeVaney (2005). Gender and nationality of the household head do not show any significant influence on holding consumer loans.

4.2.2. Determinants of consumption

So far, it is clear that there are obvious differences in the use of overdrafts between self-employed and employee households. Still, we have not been able to measure intermingling directly. For this purpose, it is necessary to analyse the interrelation between source and use of household funds. From a bank's perspective, consumer loans are intended for consumption, a variable that is measured by the EVS survey. The following analysis is based on the assumption that all funds that generated from consumer credit but not used for consumptive purposes are transferred to the business (see Figure 1). Investment in financial (e.g. shares) and non-financial (e.g. real estate) assets are considered as most unlikely, as terms and conditions of

consumer loans are not apt for this kind of capital spending (see also section 2.3).[14] Based on the findings of the previous section it is supposed that self-employed households will spend funds in particular from overdrafts for consumption *and* business purposes.

In order to test this conjecture, an OLS model is specified, with consumption as the dependent variable. The independent variables comprise all relevant aspects of household consumption, including *inter alia* food, clothes, rent, energy and furniture as well as expenditures on education, leisure time and culture. Control variables are adopted from the logit model determined in section 4.2.1., whereas assets are neglected as their effect on consumption is dubious. Two different regressions are run, each employing an interaction term for being self-employed and using overdrafts, and instalment loans, respectively:

(1) CONSUMPT ^{t} $=$ $\alpha_0 + \beta\, SELFEMP * OVDRFT^t \sum_{i=controls} \chi_i control_i + \varepsilon$

(2) CONSUMPT ^{t} $=$ $\alpha_0 + \beta\, SELFEMP * INSTLOAN^t \sum_{i=controls} \chi_i control_i + \varepsilon$

Low bivariate correlations between the independent variables indicate absence of multicollinearity. Unlike the first model, loan take-ups are only measured within the acquisition period (this is indicated by the superscript t) in order to assess the temporal concurrence with household consumption. Regression results are displayed in Table 3.

A Chow test shows that the coefficients for the overdraft and instalment loan dummies differ at the 1% level of significance. Clearly, employees show a much stronger tendency to channel their loan proceeds into consumption than the self-employed. We therefore conclude that this "trickling away" is an indication that funds have been re-directed into other uses that are specific to self-employed, i.e. their business. This finding extends the observations of the previous section, and offers an explanation why self-employed households show different financing patterns than employee households.

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[14] We emphasize that we cannot exclude that consumer loans are sporadically used for other private investments or even for buying shares or other high risk assets on the stock market.

Table 3: OLS Estimates of Consumption Function for Self-Employed and Employee Households

	Self-Employed		Employee	
	Model I	**Model II**	**Model I**	**Model II**
LOGINCOME	0.260***	0.267***	0.282***	0.288***
	(0.019)	(0.019)	(0.053)	(0.052)
AGE	0.005	-0.047	-0.109***	-0.111***
	(0.099)	(0.096)	(0.019)	(0.018)
AGE2	0.0498	0.104	0.167***	0.171***
	(0.105)	(0.102)	(0.023)	(0.022)
HHSIZE	0.721***	0.699***	0.682***	0.684***
	(0.142)	(0.140)	(0.027)	(0.026)
REGION	-0.486	-0.445	-0.317***	-0.365***
	(0.255)	(0.245)	(0.061)	(0.057)
MARRIED	0.523	0.580	0.553***	0.513***
	(0.482)	(0.462)	(0.073)	(0.070)
COLLEGE	0.254	0.317	0.255***	0.260***
	(0.293)	(0.286)	(0.073)	(0.070)
FEMALE	0.520	0.473	0.200***	0.187***
	(0.397)	(0.396)	(0.060)	(0.057)
GERMAN	-0.633	-0.546	0.573***	0.589***
	(0.796)	(0.798)	(0.164)	(0.159)
OVDRFT^{t}	**0.131**		**0.409*****	
	(0.242)		**(0.059)**	
INSTLOAN^{t}		**4.992*****		**6.701*****
		(0.989)		**(0.291)**
Constant	1.777	2.583	2.403***	2.220***
	(2.398)	(2.341)	(0.411)	(0.392)
Pseudo R²	0.298	0.320	0.342	0.399
Observations	1,954	1,954	25,663	25,663

Robust standard errors in parentheses

*** significant at a 0.1% level   ** significant at a 1% level   * significant at a 5% level

5. Limitations and Future Research

A caveat to this study is that due to data restrictions, intermingling can only be measured indirectly. Therefore, we focus more on the interpretation of the direction and significance of the specific variables. In order to obtain more accurate information on this increasingly important topic, effort should be put into building a comprehensive panel data set on small business in Germany. Comparable to the SCF in the US, questions should include those directly addressing the tendencies of financial intermingling between households and businesses, while simultaneously

collecting information on loan types and amounts. For, as Haynes and Avery (1996) state, 'the small business finance picture can only be completed when the finances of the business and the household can be assessed concurrently'.

Related to the present approach, interesting and economically relevant questions could be analysed once firm micro data with a longitudinal structure and information about owners financing strategies of firms is collected. First, and foremost, it would be possible to identify what kind of people are self-employed and, at the same time, use consumer loans as a financing strategy? What happens with the businesses and with the persons making use of such a financing strategy? Do the long-term success rates of businesses financed with consumer loans differ from businesses that were financed with other means?

6. Conclusions

The intermingling of private and business finances by self-employed households is becoming a topic of increasing importance. However, little is known about which sources of finance are transferred from the household to the business. In this exploratory study we examine the role of consumer credit in funding self-employed activities. To do so, we used the 2003 German Survey of Income and Consumption (EVS), which provides us with data on the major sources of consumer credit, namely personal overdrafts and instalment loans. We then compare the data from self-employed households with those of regularly employed households, and analyse differences in the use of loan types.

We found first evidence that households with self-employed business owners are more likely to use overdrafts than households with regularly employed persons. We test whether self-employed households tend to intermingle personal and business finances by using consumer loans for business purposes. The empirical findings support the fact that these households use consumer loans for business purposes.

We show that self-employed households are significantly more likely to use overdrafts, and explain this observation by the fact that these loans are (at the cost of higher interest rates) highly flexible and not tied to any pre-specified conditions. Further, this loan type allows access to loan amounts below €25,000, a segment

where banks have the lowest approval rates of business loans. Our second analysis shows that having a consumer loan has a weaker effect on consumption behaviour for self-employed than for employee households. This trickling away effect gives support to the 'hidden financing' conjecture proposed by Haynes and Avery (1996).

As using overdrafts as a device to finance businesses is sub-optimal (we discussed the problems arising out of this financing strategy), our analysis highlights that more alternative options of accessing external finance need to be opened to small and micro entrepreneurs then in the past. At the moment the most often discussed alternative is a major increase of microloan offers to the meet the demand in this loan segment. As shown in Kritikos, et al. (2009), this loan type has some advantages versus consumer loans. While similarly flexible as overdrafts, the major advantages of microloans are that this loan type provides business owners with a legal access to a more reliable business loan, allows the firm to develop a credit history and keeps risk from directly affecting the household, while it is similarly flexible as consumer loans.

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