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COOPERATIVES AS INFORMATION MACHINES: THE LENDING PRACTICES OF GERMAN AGRICULTURAL CREDIT COOPERATIVES, 1883-1914

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Abstract

Credit cooperatives are common institutions today and were numerous in several European countries during the nineteenth century. Credit cooperatives were especially successful in Germany. The credit cooperatives' success is surprising, given that German banks were highly developed relatively early. Why was there any room for another financial institution? One explanation offered by modern economists for the success of credit cooperatives emphasizes two features of cooperatives: they can capitalize on superior information about borrowers and they can impose relatively severe sanctions on miscreants. These features permit cooperatives to lend to individuals that banks would not want as customers and to tailor loan terms more closely to borrower's needs. German cooperators made similar arguments about the efficiency advantages of cooperatives in the nineteenth century. This paper uses the historical business records of several German credit cooperatives to test this hypothesis. We examine the lending policies of German credit cooperatives to see whether they different from banks and other lenders in ways that suggest more information on borrowers, the ability to impose more severe sanctions on borrowers, or both. The results show that a real efficiency advantage was at least part of the explanation for the cooperatives' success.

KEY WORDS: Rural credit markets, Cooperatives

Agricultural credit cooperatives were introduced in Germany during the 1850s. By World War I they were, collectively, a major financial institution. The 18,000 rural credit cooperatives existing in 1913 held some 5 percent of all German banking liabilities.[1] Rural credit cooperatives usually had fewer than 200 members, limited their operations to a small geographic area, and had no full-time staff. Given their structure and potential competition from Germany's well-developed formal banking system, the success of these institutions requires some explanation. Economists and other modern scholars do not agree on why cooperatives can operate where other financial institutions seemingly cannot, nor did nineteenth-century Germans agree on why their cooperatives thrived. This paper uses the example of the German cooperatives to test one popular hypothesis: that cooperatives succeeded because they overcame problems caused by asymmetric information and enforcement problems in credit markets.

Credit in general and credit cooperatives in particular were the subject of much polemical discussion at the time. The credit cooperatives' advocates argued that the institutions prospered because they had an *efficiency* advantage over banks. The cooperative's efficiency advantage rested, advocates argued, on a combination of better information about borrowers and the ability to use sanctions not available to banks. Thus cooperatives could make loans to customers no bank would want, and could do so on relatively attractive terms. Critics of the cooperatives — and there were many, both in Germany and elsewhere — traced their growth to a number of other factors, all of which have the common feature of implying that the cooperative structure had no particular efficiency advantage. Two very common critiques were that (1) the cooperatives relied on local boosterism in the form of unpaid managerial labor; and (2) that the cooperatives were essentially patronage devices through which local elites controlled access to credit for poor people, and with it, their customers, laborers, etc.

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[1] Bank liabilities (excluding note issue) totaled 65.6 billion Marks. This figure includes the Great Banks (*Kreditbanken*), public savings banks (*Sparkassen*), and the several State-sponsored land banks (Deutsche Bundesbank [1976:DI Tables 1.01-2.01]).

This paper uses the manuscript business records of several German credit cooperatives to test the "efficiency" view against a composite alternative hypothesis that will, here, go under the name of "control."[2] We test two implications of the efficiency view. First, we see whether the cooperatives relied on the practices that banks used to contend with information and enforcement problems, such as relying on short-term loans and frequent renewals. To the extent cooperatives did rely on these devices, we cannot sustain the view that their success reflects information and enforcement advantages. Second, we examine the characteristics of borrowers and loan terms to see whether the cooperatives discriminated across borrowers in ways consistent with variations in the cooperatives' information and enforcement advantage. We conclude from this evidence that information and enforcement advantages were an important aspect of the cooperative's success, although probably not the entire story.

A close look at these cooperatives can shed new light on several distinct issues in economics and economic history. First, cooperatives and similar schemes play a large role in development policy, but there is little agreement on *why* they work, and so, it would seem, little basis knowing when and where they will work. Economists have suggested several "peer-monitoring" models, but there is no agreement that is the right view (e.g., Braverman and Guasch [1989], Stiglitz [1990], Varian [1990]). Second, the theory of asymmetric information now occupies a prominent role in economic analysis of financial structure and financial markets. Yet direct evidence on the importance of asymmetric information is scarce, and some economists downplay the entire notion (e.g., Berger and Udell [1992]). Since the cooperatives were, according to their backers, information machines, comparing the practices of these institutions to conventional banks constitutes an indirect test of the asymmetric information hypothesis in rural German credit markets. Finally, German agricultural advances during the latter part of the nineteenth century were considerable, and certainly play a role in explaining that country's rise to

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[2] For the purposes of this paper the alternative hypothesis is simply one which denies an efficiency advantage. Guinnane [1993] gives closer attention to the alternative hypothesis.

economic prominence prior to World War I. The economic history of German agriculture in this period remains to be written, but if cooperators' claims hold any truth, part of this advance reflects improved credit conditions for the country's many smallholders.

This paper only hints at two related methodological problems in the larger project. Microeconomic analysis of institutions, especially by economic historians, has convinced many that what seems like irrational or at least traditional behavior often has a sound economic rationale. For example, McCloskey [1975] argued that scattering within English open fields was consistent with an effort to manage risk by diversifying land across micro-climates. This approach to the analysis of institutions marked an important advance. Yet much research in this vein suffers from a common weakness: writers show that a particular institutional arrangement is consistent with *some* economic model, but make little effort to demonstrate that the model proposed explains the evidence *better* than either other economic models or previous, non-economic interpretations. That is, there has been little effort to drawn out the testable implications of competing explanations of institutions, and to test these implications against the available information. Thus we can conclude only that scattering or some other institution *might* have been motivated by risk-aversion. We have no concrete reason to prefer the risk explanation to any other argument that is logically coherent. The larger project of which this paper forms a part seeks to remedy this weakness, at least for the cooperatives. I am trying to set up alternative explanations for various aspects of cooperative design (including, as here, their very success) and to confront the implications of those alternative explanations with the evidence available. Banerjee, Besley, and Guinnane [In press] is one variant on this effort. In that paper we compare the comparative-static properties of a formal model of the cooperatives to cross-section data on the cooperatives. Here I take a less formal approach, but the motivation is similar.

Noting this limitation of earlier research does not mean that it is easy to test alternative explanations of an institution's design or operation. However different the notions underlying two

alternative explanations might be, they often imply very similar empirical patterns. Moreover, with historical data the information that could in theory discriminate between two competing views is often unavailable or at least sufficiently ambiguous as to make discrimination imperfect. The tests proposed and undertaken below, for example, cannot reach entirely unambiguous results, although they have sufficient power that when combined with other tests in later research they may convincingly discriminate among alternative explanations of the cooperatives. Finally, there is no reason to expect that any two explanations of an institution's operations are *necessarily* mutually inconsistent. For example, in the case of the cooperatives, the efficiency view may explain how the cooperative was able to generate a surplus, while the control view pertains to the distribution of that surplus.

The paper proceeds as follows. Section I provides brief background on the history and organization of the agricultural credit cooperatives in Germany. Section I also briefly touches on some aspects of cooperative design and behavior that are considered more extensively in other parts of the project. Section II provides background on the manuscript sources and the cooperative locales. Sections III and IV draw out the implications of the information view and test them against the available information. Section V discusses the cooperatives as alternatives to moneylenders, the other major source of credit in rural German. Section VI briefly outlines other parts of the project, and discusses how they bear on the evidence discussed here.

I. Historical and Organizational Background

Rural credit was a significant problem in Germany during the second half of the nineteenth century. Land reform and emancipation had created a free but undercapitalized peasantry, and the agricultural price declines of the 1880s and later left some holdings over-burdened with mortgage debt. Several German states had instituted *Sparkassen*, or State-backed savings banks, as well as several types of land banks and other lending institutions. Yet critics claimed that neither these institutions nor

Germany's Great Banks were prepared to offer reasonable loan terms to small farmers and to laborers. Prior to the introduction of credit cooperatives, smallholders and the landless in Germany depended for credit on shopkeepers, agricultural dealers, and other informal lenders (Faust [1977:328-332]; *Verein für Socialpolitik* [1883,1887]). Credit conditions in Germany sound similar to those found in many developing countries today. Credit was expensive, and many accounts mention "interlinked markets," credit relations that are part of some other transaction (cf. Bell [1988], Besley [In press]). Totaling explicit and implicit costs, sober observers claimed that annual interest rates in excess of 30 percent were not uncommon.[3]

Responding to these conditions, Hermann Schulze-Delitzsch founded several cooperative associations during the 1840s and 1850s. By 1861 there were 364 Schulze-Delitzsch credit cooperatives with nearly 49,000 members (Herrick and Ingalls [1915:267]). By World War I the German cooperative movement had three distinct, often quarreling branches. Raiffeisen's first credit cooperative was founded in Neuwied (Rheinland) in 1864. Raiffeisen modeled the Neuwied society along the lines of the Schulze-Delitzsch banks, but later advocated important organizational differences (Raiffeisen [1951]). Schulze-Delitzsch's cooperatives were addressed to the credit problems of urban artisans and "handworkers." Raiffeisen's cooperatives were intended to be, and remained, primarily rural. Wilhelm Haas later started a less doctrinaire branch of the cooperative movement that is for our purposes largely an offshoot of the Raiffeisen organization. By the end of the nineteenth century Haas' Imperial Federation had admitted the majority of rural credit cooperatives in Germany.[4] Schulze-Delitzsch cooperatives were rare in rural areas, but often served agriculturalists in the absence of rural cooperatives. In 1911 some 29 percent of

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[3] See the surveys reported in *Verein für Sozialpolitik* [1887].

[4] All three branches are now united into the single organization, *Bundesverband der Deutschen Volksbanken und Raiffeisenbanken - BVR*. Many narratives recount the history of the German cooperative banking movement; we are only concerned with the main strands in its development. See, for example, Herrick and Ingalls [1915]; Cahill [1913]; Gueslin [1978]; or Faust [1977].

the members of Schulze-Delitzsch cooperatives were either farmers or agricultural laborers (Great Britain [1914:§311]). The most important distinction dividing credit cooperatives concerned liability; all Raiffeisen credit cooperatives and most Haas cooperatives had unlimited liability. Under the German cooperative law, any unsatisfied creditor could sue any member of a failed unlimited liability cooperative for up to the full amount of outstanding debts.[5]

All of the credit cooperatives studied here were of the Haas or Raiffeisen type; all had unlimited liability and restricted their operations to fairly small, rural areas. The study cooperatives were for the most part *credit* cooperatives only. Many Raiffeisen credit cooperatives engaged in non-credit business, such as purchase and resale of fertilizers. More commonly, however, non-credit cooperatives would be formed with distinct membership and organizational structure, and then join the credit cooperative as a member. The advisability of "universal" cooperatives was a distinct debate in Germany at the time, but need not concern us here.

The Haas and Raiffeisen organizations developed similar supra-local structures. At the bottom were the individual cooperative banks. In the middle were regional banks (Centrals) and associated regional organizations that provided a number of services such as auditing. The Centrals accepted surplus deposits from local cooperatives and made loans to cooperatives needing more funds than they had on hand (Jost [1913]).[6] At the top was some type of all-German federation. The federations set overall policy for their respective movements (such as whether to accept limited-liability cooperatives) and represented their members in political lobbying. By joining a federation a cooperative agreed to abide by certain rules (such as, for Raiffeisen cooperatives, unlimited liability). But each credit cooperative retained authority over interest rates, maximum loan sizes, and other policy matters. Each credit

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[5] Guinnane [1993] gives further detail on differences in German cooperatives. Banerjee, Besley and Guinnane [In press] study the implications of liability structure and other organizational issues.

[6] The Raiffeisen cooperatives used as their Central a single institution in Neuwied with branches elsewhere.

cooperative had three managerial bodies. The management committee (*Vorstand*) represented the cooperative judicially and made most important decisions: accepting new members, granting loans, etc. The board of supervision (*Aufsichtsrat*) met less frequently to oversee the management committee. The membership as a whole (*Generalversammlung*) met annually to elect the management committee and board of supervision and to make decisions on basic policies such as interest rates. Each cooperative had a part-time treasurer (*Rechner* or *Rendant*) who was paid for his effort.[7] Most rural cooperatives did not pay any official other than the treasurer.

Cooperatives, Information, and Enforcement

Nineteenth-century claims about cooperatives as information machines sound curiously modern in view of the very large literature on asymmetric information in credit markets.[8] The nineteenth-century discussions emphasize the fact that managers of banks — even fairly small, remote branches — cannot hope to know much about the many smallholders in their region who might want to borrow from the bank. A lender who lacks complete information on potential borrowers faces the problems of *hidden characteristics*, where the lender cannot know if the borrower can or intends to use the loan in a way that makes repayment likely; *hidden action*, where the lender cannot costlessly watch over the borrower to make sure he uses the loan wisely; and *state verification*, where the lender cannot know whether a failed borrower lost the investment because of some unwise action or because of some force (such as weather) beyond the borrower's control. Information aside, lenders may not be able to enforce the terms of loan

[7] "His" is used advisedly. Some cooperatives forbad females from joining; most did not permit females to hold office prior to World War I. The treasurer's annual pay was linked, implicitly or explicitly, to turnover, which was probably a reasonable measure of his effort.

[8] Seminal papers include Jaffee and Russell [1976] and Stiglitz and Weiss [1981]. Hoff and Stiglitz [1990] and Besley [In press] describe the role of information in developing-country credit markets.

contracts. Lenders find ways to overcome these problems, but often the solution is either costly or makes the loan terms unattractive to agriculturalists. We discuss these methods, and their drawbacks, below.

Raiffeisen and other leaders argued that in a cooperative limited to a small geographic area, such as a village or several hamlets, actual and potential members would have considerable knowledge of each other's habits, character, and abilities. They could, moreover, impose a wide variety of economic and extra-economic sanctions on one another. The Raiffeisen organization reported in 1913 that 80 percent of its cooperatives were in areas with 3000 or fewer persons (Winkler [1933:65]).[9] Peasant nosiness forms the basis of the efficiency hypothesis. Fagneux refers to these small villages as places "where one's eyes are so attentive to what occurs among the neighbors" (Fagneux [1908:39]). In an environment where people care about and talk about what their neighbors are doing, it would be difficult to misuse a loan to engage in some other practice out of the ordinary. Moreover, the cooperative's members engaged in similar economic activities, meaning that each would be a good judge of the wisdom of projects proposed by others.

In theory the cooperative exploited this information by: (1) *Screening*: The cooperatives did not admit all applicants as members and did not grant loans to all members who applied. (2) *Monitoring*: Hiring a monitor can be expensive, but cooperatives could monitor their borrowers simply by having members keep an eye on borrowers and what they were doing with loans. (3) *State verification*: A cooperative's members knew whether a borrower suffered a shock beyond his control or whether he had simply used the loan unwisely because they could observe his production decisions and because all members were subject to similar weather and other shocks. The cooperative could also have advantages in enforcement, although this is not strictly an information issue. Because cooperatives were locally-based and refused membership to those resident outside their own area, a member ejected from a cooperative

[9] Each cooperative limited itself to a specific area of operation. Sometimes this area was contiguous with a political subdivision, such as one or more *Gemeinde*; some cooperatives studied here limited themselves to parishes.

was cut off from *any* cooperative credit. Equally costly was the public knowledge of the reason for this dismissal in his own village. In addition, the cooperative combined individuals who had many other relationships with one another. Sanctions could be applied in dimensions unrelated to the cooperative. If someone cheated the cooperative, his neighbors might refuse to sit next to him at church or to socialize with him. A bank, in contrast, could at most refuse future credit to a defaulting borrower.

The cooperative's ability to gather and use information was enhanced considerably by an important feature of its membership: at any one time borrowers were ordinarily a minority of cooperative members. Why did people join a credit cooperative? The simplest answer would be so that they could have access to cheaper credit. But this answer would not be entirely accurate, as Table 1 shows for the two cooperatives with this information currently available.[10] Many members waited a long time before taking a loan, and many never borrowed at all. Why join a cooperative if you do not need credit? Two reasons seem most likely. Many cooperatives were located in areas remote from alternative savings institutions such as *Sparkassen*. Joining the cooperative conferred important economic advantages such as the right to participate in monitoring the use of deposits (that is, loan policy) and in setting deposit interest rates. The presence of non-borrowing members might have been important to preventing collusive arrangements among borrowers; the village was filled with people with every incentive to report unwise use of credit.[11] Even in situations where other savings institutions were as convenient as the cooperative, some individuals may want to contribute to local economic development by making their savings available to their poor neighbors, via the cooperative. This second motivations has several versions. Some

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[10] The data used to compile Table 1 are explained in the next section.

[11] The German agricultural credit cooperatives' attractiveness as savings institutions was, I have argued elsewhere, one of the keys to their success (Guinnane [In press]). This comment is not meant to suggest that only non-borrowing members could provide the right incentives for such a credit scheme. Besley and Coate [1992] model group-lending schemes (such as Bangladesh's famous Grameen Bank) in which borrowers have incentives to monitor *each other* because the lending scheme provides credit on much better terms than any alternative.

depositors may be simple altruists. Others may profit from better credit conditions for the poor; a shopkeeper may prefer that potential customers to spend less of their income on interest payments to a moneylender and more on his goods. One version of the "control" view suggests a less benign reason. If a single depositor owns a large fraction of the cooperative's working capital, he may be able to intimidate the *Vorstand* with threats to withdraw those funds, and so exercise control over his laborers and others.

So far we have discussed information advantages and enforcement advantages as if they were the same thing, which they are not. By enforcement problems we mean simply that should the borrower fail to use the loan in the stipulated way or fail to repay the loan, the lender would find it prohibitively costly or even impossible to recover the sum through judicial means. Information and enforcement problems are closely related, however. Even if sanctions were costless a lender might not always apply them in the presence of information imperfections. Most lenders are concerned to appear "fair," to refrain from applying sanctions to borrowers who could not repay for reasons beyond their control. We will consider the implications of the difference between information and enforcement advantages in section V below.

II. The Sources

The central empirical source for this project consists of material taken from the business records of several German cooperatives for the late nineteenth and early twentieth centuries. Figure 1 is a locator map of Germany, showing both the towns containing the Raiffeisenbanks and several large cities for reference purposes.[12] Thus far cooperatives pertaining to five Raiffeisenbanks have been studied: one each in Diestedde and Leer, which are located in Münsterland; one in Hatzfeld, which is in north Hessen;

[12] The study cooperatives are all located in the former West Germany. This is not accidental. Cooperatives were, in fact, more common in western Germany during the nineteenth century. More importantly, the *Bundesverband* does not have within its membership, at least as of now, any survivor of the cooperatives located in the former East Germany.

several cooperatives located in and around the town of Schmelz, in the Saarland; and several cooperatives in and near the town of Maulburg, in southern Baden. The records of a sixth Raiffeisenbank, in Rheinbach, have not yet been exploited extensively yet. Diestedde and Leer have a single credit cooperative's records in their possession. The other Raiffeisenbanks have material from several cooperatives. Where necessary for clarity these cooperatives will be referred to throughout this paper by their own name and that of the Raiffeisenbank; for example, Limbach (Schmelz).

Each cooperative was required by law and by federation rules to keep certain records. Cooperatives kept minutes of meetings and day-to-day balance books and prepared financial and statistical reports for the regional auditing organization. There were, however, no legal requirements that cooperatives deposit their old records with any public archive, so records survive only because the individuals associated with a particular cooperative made that happen. Few cooperatives had buildings or even quarters dedicated to their use before the 1950s. The surviving records were simply kept in the treasurer's home. The *Bundesverband der Deutschen Volksbanken und Raiffeisenbanken - BVR* arranged access to all of the material used. The *Bundesverband* sent a copy of a brief description of the research proposal to each of their regional organizations, which in turn contacted their Raiffeisenbanks.[13]

The incomplete survival of cooperative records raises the possibility that the records available would not yield a balanced view of the cooperatives actually in operation during the nineteenth century. What those biases might be is unclear. Record survival depended on personal actions of cooperative and later bank officials, war damage, etc. Survivor bias could be a problem, although not as great as it might seem. Some unsuccessful early cooperatives simply wound up their business, while others were merged with larger, neighboring institutions. Thus the records currently on hand at surviving Raiffeisenbanks

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[13] At one time the term *Volksbank* denoted a Schulze-Delitzsch institution, and *Raiffeisenbank* denoted an institution based on Raiffeisen or Haas principles. With the reorganization of cooperatives since World War II, the distinction has lost its meaning. Many present-day *Volksbanken* selected that name because it lacks the rural connotation of *Raiffeisenbank*.

include material pertaining both to their direct ancestor (which at least survived) and to other cooperatives that folded or were taken over by their more successful counterparts.[14] At any rate, these sources just do not permit intensive study of a random sample of credit cooperatives. In the larger project I address this problem in two ways. First, I use published material to compare certain characteristics of the study cooperatives to all cooperatives in that region, and, to the extent possible, to verify conclusions reached using the manuscript information. Second, hundreds of Raiffeisenbanks have commissioned bank histories for their 75th or 100th anniversaries. These bank histories are brief and of very uneven quality, but since they often focus on unusual features of their institution's history they yield some feel for broader cooperative behavior. Since this research is still in progress, not all information located has been assembled into a form useable at this stage. And as this project progresses, additional high-quality records may come to my attention.

The Cooperatives Studied

Guinnane [1993] reports detailed background information on the cooperative locales. For our purposes a simple characterization suffices. With the exception of Schmelz all locales were overwhelmingly agricultural. Many workers in the Schmelz area were miners but had small farms as by-employments. Diestedde had the largest farms, averaging nearly 10 hectares, while farms in Leer cooperative were smaller at 6 hectares. Hatzfeld had the smallest farms (outside Schmelz) at about 3.5 hectares on average. Hatzfeld lies in a mountainous region and was almost certainly the poorest of the study areas.[15] Table 2 reports membership sizes and assets per member for the four cooperatives for

[14] For example, the Miel cooperative was later absorbed into the Rheinbach *Raiffeisenbank*. The Miel cooperative was quite badly managed and had to wind up its business, but its records have been preserved because of its absorption into the more successful institution.

[15] Maulburg was not in Prussia and so the same statistical information is not (as yet) available. This region lies at the southern end of the Black Forest, along the Swiss border. It figures little in the discussion below.

which this information is available. Although all cooperatives shared similar characteristics, there was important heterogeneity in membership size and in assets: the Hatzfeld cooperative started out with more members than most, while the Diestedde cooperative's assets distinguished it from other cooperatives. Only one cooperative's records consistently report member occupations. This information, for Diestedde, is reported in Table 3. *Kolon* and *Kötter* are local terms denoting a large farmer (one who hires labor) and a small farmer (one who has land but also hires himself out), respectively. The Diestedde cooperative was founded by agriculturalists, but later attracted non-agriculturalists. Bank histories and other accounts suggest that this was a fairly typical pattern for rural credit cooperatives.

The records actually available for each cooperative are not identical. Three factors are most important in creating differential information. First, some cooperatives saved some books and not others. Second, the individuals taking minutes of meetings had different habits. For example, sometimes the person keeping minutes for the *Vorstand* would record the purposes of loans, but often not. Since printed forms were rarely used for this purpose, the information is not always uniform. Third, some of the information comes from printed forms that were the basis of reports to the Central or auditing federation. Different auditing federations requested different information. All this being said, it should be noted that the information most important to this research was checked by an auditor who sometimes found, and corrected, errors. The information may be available only unevenly, but the information we do have is of high quality.

III. Testing the Efficiency View I: Lending Policy

Economists and economic historians have argued that some features of financial institutions, such as their organization or their loan policies, reflect their lack of complete information on borrowers. Observers of agricultural credit in nineteenth-century Europe often noted that the loan policies of commercial banks made them institutions unsuited to solving the problems of small farmers and the

agricultural poor. Banks' defenders argued that the policies blamed were sound business practice, especially when dealing with poor people whom the bank did not know well or with whom the bank might have difficulty enforcing loan terms. The banks' critics in the cooperative movement pointed to two policies in particular, reliance on short-term lending and the requirement that larger loans be secured by collateral, usually land. Short-term lending permits the lender to monitor the loan's use and the borrower's condition. A borrower may effectively have a loan for three or four years, but by requiring that he renew the loan every three months, the lender can satisfy himself of the borrower's condition. Schulze-Delitzsch cooperatives, in fact, explicitly limited loans to three months as a way of keeping tabs on the borrower's situation (National Monetary Commission [1911:456]). Short-term loans were almost a point of orthodoxy among nineteenth-century bankers, and were, as Lamoreaux [1991] shows for the U.S., a reaction to a poor information environment.[16] Short-term lending entails several costs for borrowers, costs that are particularly severe for agriculturalists. First there is the cost of renewing a loan every three months. The borrower had to pay transportation costs and lose work time in travelling to the bank's offices. These costs were even higher if the loan had a co-signer who also had to visit the bank office to renew the loan. Second, loan renewals discouraged illiquidity (which is why lenders liked renewals), but by so doing discouraged agricultural borrowers from investing in long-term projects that could raise their incomes.

Collateral functions as a screen and gives a borrower better incentives to work hard and to use safe technologies. Requiring collateral also has its costs. Some costs are explicit, such as the costs of registering the mortgage with the authorities. Moreover, many of those the cooperative movement was

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[16] Short-terming lending was also advocated by German bankers as the only practical way to avoid liquidity problems. The actual term-structure of lending by German banks has been difficult to pin-down. The Deutsche Bank's consolidated balance sheet for 1907, to take one example, shows about 80 percent of its assets in short-term lending (National Monetary Commission [1911]). The more relevant competition for cooperatives would be the smaller banking houses — so-called *Privatbankiers* — for whom no balance sheets have been as yet located.

most interested in serving had little or nothing in the way of assets a formal financial institution could accept as security. And, as noted above, some German landholders had land that was already heavily mortgaged by the time cooperatives came on the scene.

The lending policies of agricultural credit cooperatives suggest that information and enforcement were *not* serious problems: they made long-term loans, and while collateral was used, it was comparatively rare. Long-term loans were in fact an important reason for having cooperatives, their leaders thought, and without belaboring the point we can use quantitative information to show that the cooperatives fulfilled this part of their mission. Table 4 summarizes the duration of loans outstanding from the Leer cooperative for selected years. In its early years the cooperative relied more heavily on short-term loans, but by 1909 some 40 percent of its loans were for 20 or more years. And the cooperative's "short-term" loans were, in comparison, long-term; commercial banks typically relied on 90-day loans, while most of these Leer loans were for 6 months to a year. Analysis of the Raiffeisen federation's annual reports shows something very similar; the preponderance of loans were made for one year or longer, with nearly half made for 10 years or longer. Table 5 shows that this preponderance of long-term loans was not limited to a single cooperative; for the Raiffeisen federation as a whole, long-term loans were the norm.[17]

Security for Loans

Loans not made on collateral were rarely unsecured. Cooperatives relied on one of two forms of security. "Personal" security to us means that a co-signer (usually but not always a cooperative member) agreed to guarantee the borrower's promissory note to the cooperative. The co-signer in fact

[17] Some critics who took the "control" view noted that these long-term loans were subject to 3-month recalls and argued that the threat of such recalls deterred borrowers from actually investing the funds in long-term projects. The recalls (and threats of recalls) in the manuscript records do not suggest that action was ever taken except in cases of clear abuse of loan terms. See Guinnane [1993] for discussion of this evidence.

played three roles: He acted as a further screen, since if he thought the borrower unreliable he would not co-sign the note; he had an increased incentive to monitor the borrower during the loan's life; and the co-signer's own assets were, in effect, pledged to make good the loan should the borrower not repay. Reliance on co-signers implies considerable information about the borrower *and* the co-signer, and the ability to enforce loan terms with at least one. Cooperatives were not alone in using co-signers to secure loans, but the identity of these co-signers was quite different from those accepted by formal financial institutions. Commercial banks often lent money on two signatures, but in that case at least one was a wealthy individual, often with substantial sums on deposit at the bank. The bank did not need to know much about the borrower or the co-signer; it had the co-signer's deposit as security for the loan. Bank's reliance on wealthy co-signers meant that to obtain credit the borrower would have to approach someone his social and economic superior. Accounts mention that co-signers extracted some surplus from the relationship, insisting that the borrower make up their lost time with free labor and sometimes using the threat of not signing a renewal note to gain other advantages. Co-signers for cooperative loans tended to be much poorer. In one case in Rheinbach, for example, two laborer brothers borrowed 50 Marks each and co-signed each other's loans.[18]

Collateral security was usually land and buildings. Reliance on collateral for loans varied across time and across cooperatives, but *none* relied on it very heavily. The Hatzfeld cooperative made virtually no loans on collateral security during the period covered. Other study cooperatives did make such loans, but they were never a majority of all loans. In Diestedde, for example, about 60 percent of all loans made during the study period were secured by a co-signer only. The national data for the Raiffeisen federation in Table 5 tell a similar story. Loans made on collateral tended to be larger than other loans, but the records contain significant numbers of very large loans made on personal security. The mean size of loans backed by co-signers in Diestedde was 1526 Marks, compared to 2676 Marks for loans on collateral, but

[18] *Protokollbuch für den Vorstand*, Oberdrees (Rheinbach), March 19th, 1909.

there was considerable overlap in two distributions. Twenty-five percent of co-signer loans in Diestedde were for 1500 Marks or more.

Cooperative leaders often implied that they restricted loans to productive purposes on the grounds that these loans were most easily monitored and most likely to be repaid. While interpreted by contemporaries as reflecting the role of information in the cooperative's operation, this policy — were it enforced — might simply reflect the relative difficulty of screening as opposed to monitoring. The manuscript records sometimes mention the purpose for which a loan was granted. Unfortunately, this information was not always given, and in some contexts it seems the loan's purpose was mentioned because it was noteworthy. In one case, however, the cooperative used a printed form that included a space for loan purpose. This produces a more complete run of information, summarized in Table 6. Many of these loans were clearly *not* for productive purposes. And how could one monitor a loan used to pay off old debts? On the other hand, if the cooperative movement's claims were accurate, then permitting new members to pay off old debts to moneylenders by taking on low-cost cooperative loans would be a certain way to raise incomes. The cooperative's willingness to make loans to a member so he can pay off another debt may reflect the cooperative's knowledge of this member and confidence that loan terms can be enforced.

IV. Testing the Efficiency View II: Loan Characteristics

A second way to test the efficiency view is to examine the characteristics of the loans cooperatives made. The efficiency view implies that individuals for whom the cooperative has better information and more potent sanctioning ability receive better loan terms. How would this behavior differ from conventional lenders, such as a bank? One would expect that *any* financial institution would adjust its loan terms to reflect the borrower's characteristics. The point of this second level of analysis — which is only meaningful in the context of the discussion of the previous section, which showed the basic difference

in cooperative lending policy — is twofold. First, an extreme version of the control view would hold that cooperatives did not discriminate across borrowers at all. We might not be able to distinguish the cooperative from a bank in this regard, but we can evaluate the basic claim. Second, and more specific to the cooperative, if the cooperative does indeed discriminate across borrowers, then we have an explanation for its ability to depart from conventional banking practice as documented in the previous section.

To conduct this analysis we draw on an important feature of the cooperatives' records: although they do not always state a member's occupation, they almost always state *where he lives*. A member could live either in the town where the cooperative was located and where the large majority of its members lived, or he could live elsewhere in its operating region, perhaps in another small town. We have sufficient data to exploit this information for the Diestedde and Hatzfeld cooperatives. The Diestedde cooperative was formally located in Diestedde *and* Sünnighausen, two small towns less than 4 kilometers apart. About 60 percent of the members lived in Diestedde and another 31 percent in Sünnighausen. The other members of the Diestedde cooperative lived in two other tiny towns or in the countryside. The Diestedde cooperative's *Vorstand* alternated its meetings between Diestedde and Sünnighausen. Some 75 percent of the Hatzfeld cooperative's members lived in that town. The underlying presumption is that individuals who live in the main town (or towns) were better-known to other members and their activities could be better supervised. Someone who lives even a short distance out of town — for these cooperatives, it can hardly be more than 5 or 6 kilometers — cannot be nearly so well known, nor can his use of a loan be so easily monitored. In addition, the economic and extra-economic sanctions discussed above would have more force for individuals who are in closest proximity to other cooperative members. Someone who lives mid-way between Diestedde and another small town might, if ejected from the Diestedde cooperative, be able to transfer his social and business connections to the other town (although he could not expect to join the other town's cooperative).

What would be the characteristics of a loan whose borrower was well-known to the cooperative? Two implications are directly testable. First, we would expect that — conditioning on other things such as loan size — borrowers who are more familiar to the cooperative would be less likely to pledge collateral, both because of their own traits and because an individual who is well-known to the cooperative would have an easier time finding an acceptable co-signer. In fact, "well-known" for these purposes applies equally to the borrower and those whom *he* knows as possible co-signers. The same goes for enforcement. Second, we would expect that only borrowers familiar to the cooperative could take the very small loans cooperators saw as the entire point of the institution. Only a larger loan would be worthwhile if there was any fixed cost to providing information to the cooperative.

Loan Security

Table 7 reports binary probit regressions that test the first hypothesis. The dependent variable is one if the loan is secured by something other than a co-signer. We find that larger loans are more likely to require collateral, which is not surprising. The cooperative came to rely more heavily on collateral security as time progressed. This change reflects both relaxing of attitudes by cooperative federations and increased familiarity with the legal requirements of mortgage registration. Holding constant loan size, neither occupation nor being an original member of the cooperative affects security.[19] What *does* affect security is where a member lives. Those who live outside the two main towns are much more likely to have to pledge collateral. This result does not reflect the greater landholdings of those who live outside the town. We have controlled for occupation in Diestedde, and in both Diestedde and Hatzfeld many landholders lived in the main town. The same seems to apply to Sünnighausen — which is not consistent with our hypothesis — although the coefficient's magnitude is much smaller. Re-estimating the equation for farmers only, as in the second set of columns in Table 7, shows that the Sünnighausen result reflects

[19] The *Kolon* and *Kötter* variables are being used to distinguish between two classes of farms.

the sensitivity of this variable to the definition of the occupational categories. Experimentation with alternative classification of non-farming members shows that the basic result is robust.

Evaluating the probabilities implied by the regressions in Table 8 shows the magnitude of these place-of-residence effects. Consider a 2000 Mark loan made to a *Kolon* or large farmer. If he lived in Diestedde, the probability of having mortgage security for the loan is 67 percent; in Sünnighausen, 74 percent; and elsewhere, 85 percent. For smaller loans the effect is somewhat more pronounced. A *Kötter* borrowing 500 Marks would pledge security with 43 percent probability if he lived in Diestedde, 50 percent if he lived in Sünnighausen, and 65 percent if he lived outside of either town. That is, the place-of-residence effects are about as large as the occupation effects. This is large indeed; the difference between a *Kolon* and a *Kötter*, after all, is that the former has much more wealth.[20]

Loan Sizes

By observing that imperfect information acts like a fixed cost, we note that the better individuals are known to the cooperative, the more likely they are to take small loans. Table 8 exploits this observation to test the implications of place-of-residence for loan size. The estimation equation underlying the regressions in Table 8 cannot be assigned a structural interpretation, since we do not know how many loans did not take place because the fixed cost made the cooperative's terms unattractive to the borrower. We report only quantile (median) regressions; ordinary least-squares estimates gave qualitatively similar results but are sensitive to the inclusion or exclusions of a small number of outliers.

For both Diestedde and Hatzfeld, loans are larger if it was the member's first loan (which, for many, is their *only* loan), later in the cooperative's existence, or if the borrower was a *Kolon* or artisan. What is particularly striking is that loans are much larger for members who do not live in the main town.

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[20] Evaluations are for the second regression; the differences cited in the text are similar for the first regression. Evaluations assume an original member taking a loan during the cooperative's fifth year of operation.

The effect is very large for both Diestedde and Hatzfeld.[21] The very small loans for which the cooperatives were intended were more common for those who lived in town. Given that we have controlled for occupation in Diestedde, this result should not reflect occupationally-based differences in credit needs for those who live in town versus those who live outside.[22] Clearly there was some fixed cost of borrowing, a cost that deterred small borrowers from relatively remote areas. Taken by itself, the regression reported in Table 8 might not be entirely convincing: *Any* fixed cost of borrowing could produce this result. Other fixed costs that come to mind, such as the need to travel to town to apply for the loan, seem less plausible, however. These are very short distances to travel. Most people living outside the towns would have to make regular trips there to attend church, to purchase supplies, etc. The *Vorstand* ordinarily met after work hours, posing little additional inconvenience to those who might have to walk or ride a horse to town. The difference between those who lived in the main town and those who did not lies not in their costs of getting to town, but in their familiarity to other cooperative members.

V. Cooperatives, Banks, and Moneylenders

Thus far the paper has relied two expositional shortcuts. We have pretended that the cooperatives' only competition came from formal financial institutions such as banks. This was not entirely true, at least at first; Raiffeisen himself saw the cooperative as a way to fight the power of *moneylenders*. We have also made little effort to distinguish between the cooperative's possible informational advantages and its

[21] In this case, the Sünnighausen dummy is *not* sensitive to redefinitions of the occupational categories.

[22] The result is probably stronger than indicated by the regressions. The data used in these regression exclude loans made on *laufende Rechnung*, a form of overdraft used by some town-dwelling shopkeepers, artisans, and others. Precise balances for these loans are not usually available, but when available they are quite large; the limits are often 8 or 10 thousand Marks. That is, the data do not include some very large loans granted to individuals who lived in the towns.

possible enforcement advantages over other lenders. Here we abandon both shortcuts and briefly discuss the role of moneylenders and enforcement.

The literature on moneylenders is both polemical and relies heavily on anecdotes. The closest thing to a survey is the information summarized in two reports of the *Verein für Socialpolitik* [1883,1887]. These reports suggest that most moneylenders would live in the communities where they practiced their trade, but were usually despised by their neighbors.[23] To the extent this was true, we would expect the moneylender to have slightly poorer information than a cooperative (he lived in the community, but only had one set of eyes and ears) and much worse enforcement capability than a cooperative. Who would shun his neighbor for failing to repay someone the community did not like? Thus it seems likely that if cooperatives had an efficiency advantage over rural moneylenders, it was due to their enforcement capability more than any informational superiority.

VI. **Other Questions for Research**

This paper raises or refers to a number of questions that must be investigated in future research or that form part of the larger project. We have noted here a number of gaps or weaknesses in the evidence presented here. One troubling weakness in the regression estimates reported above is lack of wealth data for cooperative members, farmers especially. At the beginning of the research, bank officials assured me that tax information for this period had survived. That appears not to be the case, although the issue is being pursued. There may be other proxies for at least farm size that would help to distinguish more cleanly between borrowers of different wealth.

There are several other ways to approach this efficiency-versus-control question. We can investigate the role of the cooperative as a thrift institution. Lamoreaux [1991:161] notes that a financial intermediary faces *two* sets of information problems: its depositors are not fully informed about bank

[23] Some of this ill-feeling was simple prejudice; many but not all of the moneylenders were Jewish.

policy, and the bank cannot be fully informed about its actual and potential borrowers. In this paper we have focused on the second problem, but the first is also important. The intermediary may have to adopt a deposit system that helps imperfectly-informed depositors police the intermediary's managers' behavior, which is the point made by Calomiris and Kahn [1991]. If it does not adopt such policies then we have evidence to suggest that at least its *depositors* do not face significant information problems.[24]

If the cooperatives did not have an efficiency advantage over banks, then their interest rates and other policies must have owed something to the willingness of their managers to work without pay. This raises a useful counter-factual question: could a bank have had the cooperative's lending policies, paid market wages to its employees, and still survived? Preliminary efforts to evaluate this question, reported in Guinnane (1993), suggest a qualified "yes." The calculations simply impute wages to the cooperative's unpaid staff and subtract those labor costs from the actual net revenue. In cooperative's early years the counter-factual institution suffered losses, but quickly earned a small profit. These preliminary findings cast doubt on one critique of the efficiency view, but clearly require more research.

VII. Summary

Credit cooperatives thrived in nineteenth-century Germany, despite the existence of very well-developed formal banking institutions. From their geographic distribution and the characteristics of their memberships it is evident that the cooperatives filled a niche where other formal financial institutions could not compete. Cooperative advocates claimed that the cooperatives could lend to poor people and on more attractive terms, because the institutions harnessed the superior information on borrowers that was available to those living in small rural villages.

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[24] Charles Calomiris has pointed out that cooperatives did *not* have demandable debt, which would suggest — according to Calomiris and Kahn [1991] — that *depositors* had very good information on the cooperative.

This paper uses business records of historical credit cooperatives to test this proposition in two ways. We find that cooperatives did not rely on common lending practices, such as short-term lending, that reflected information and sanctions constraints for banks. That is, the cooperatives did away with some lending policies that made banks costly and inconvenient for smallholders, and that have been identified as reflecting informational constraints. We also find that those best known to the cooperative received the best loan terms and could take much smaller loans. This evidence suggests that information was, in fact, a central feature of the cooperatives' success.

This evidence does not, by itself, settle the issue of the reason for the cooperatives' success. Our own exploitation of the available information remains incomplete. Moreover, the alternative hypotheses are not fully inconsistent with the information view. The cooperative structure could well have had efficiency advantages that were not by themselves sufficient to explain the movements' success. The more complete story awaits additional research.

Table 1

Life-table Estimates of How Rapidly New Members Take their First Loan

Cooperative and Type of Member	Number of members	Proportion not having taken a loan, and standard error, after belonging to the cooperative for		
		6 months	2 years	5 years
Diestedde Cooperative				
All members	282	.56 (.03)	.49 (.03)	.45 (.03)
Members who joined in first year	53	.92 (.04)	.73 (.06)	.70 (.06)
Members who joined after the first year	229	.47 (.03)	.43 (.04)	.39 (.03)
Occupation: Kolon (Large farmer)	61	.77 (.05)	.67 (.06)	.62 (.06)
Occupation: Kötter (Small farmer)	115	.48 (.05)	.42 (.05)	.38 (.04)
Hatzfeld Cooperative				
All members	163	.36 (.04)	.25 (.04)	.20 (.04)
Members who joined in first year	49	.24 (.06)	.10 (.04)	.02 (.02)
Members who joined after the first year	113	.44 (.05)	.37 (.05)	.35 (.05)

Source: Computed from PB Vor Diestedde and PB Vor Hatzfeld

Notes: Some observations censored by the end of coverage. All other observations censored at 60 months.

Standard errors in parenthesis.

Table 2

Membership Size and Assets, Study Cooperatives
Selected Dates

Indicator	Cooperatives			
	Diestedde	Leer	Hatzfeld	Limbach (Schmelz)
Year Founded	1883	1891	1892	1901
Number of Members:				
In year founded	51	57	111	40
After 5 years	80	93	168 (b)	123
After 10 years	87	125	187	142
After 15 years	(No data)	147	187	N.A.
After 20 years	(No data)	N.A.	200	N.A.
In 1914	151	164 (a)	200	140
Assets per Member:				
In year founded	0.85	0.27	0.07	0.25
After 5 years	1.92	0.99	0.40	0.76
After 10 years	2.68	1.49	0.70	1.38
After 15 years	(No data)	1.94	0.98	N.A.
After 20 years	(No data)	2.53	1.54	N.A.
In 1914	6.07	2.68	1.57	1.37

Source: Rechnung und Bilanz for each cooperative; Diestedde membership figure at 20 years comes from the PB GVer, Diestedde.

Notes: "N.A." denotes not applicable because cooperative founded too late.

Assets are in thousands of Marks.

(a) Figure for 1913, 1914 data missing.
(b) Previous year, data missing.

Table 3

Occupations of Members of the Diestedde Cooperative
(Percentage of all Members)

Occupations	Members who joined in:				All members 1883-1914
	1883	1884-1890	1891-1900	1901-1914	
Kolon (large farmer)	36.2	19.3	11.3	16.0	18.1
Kötter (small farmer)	32.8	50.0	48.4	30.0	44.3
White collar worker	12.1	4.8	9.7	7.0	4.6
Artisan	8.6	12.9	16.1	25.0	17.0
Laborer	0.0	0.0	4.8	7.0	3.5
Publican	5.2	8.1	4.8	3.0	5.0
Occupation not given in sources	5.2	4.8	4.8	12.0	7.4
Total number of members	58	62	62	100	282

Source: PB Vor, Diestedde.

Notes: Coverage is from foundation in 1883 through 1914.

Table 4

Loan Durations, Leer Cooperative, Selected Years

(Original Duration of Loans Outstanding in that Year)

Year	Percentage of all loans originally granted for:				Number of loans
	Less than 1 year	2-5 Years	5-20 Years	20 or more years	
1892	36.4	36.4	24.2	3.0	33
1895	10.3	44.1	35.3	10.3	68
1900	6.7	33.3	21.2	38.8	165
1905	3.1	18.0	47.7	31.1	289
1909	8.1	21.9	28.7	41.3	247

Source: Leer R & B

Notes: Selection of years dictated by years in which this part of the form was filled out.

Table 5

Loan Terms for Cooperatives in the Raiffeisen Federation, 1901

Regions	Percent of Loans w/o Collateral	Loan durations:	
		1-10 Years	10 or More Years
Bavaria	67.8	59.2	31.5
Pfalz, Baden, and Hessen (Grand Duchy)	60.9	83.2	11.0
Brandenburg, Pommerania, and Mecklenburg	74.8	59.3	24.6
All Germany	76.9	70.3	20.8

Source: Computed from annual reports of the Raiffeisen federation and regional sub-federations.

Note: Collateral data expressed as percentage of *loans*; duration as percentage of loans weighted by original amount. This is how the reports give the information.

Table 6

Stated Purpose for Loans Granted by the Limbach (Schmelz) Cooperative, 1906-1914

Purpose	Number of Loans	Total Value of Loans Granted
Pay off old debts	14	14,524
Purchase or repair a house	12	21,080
Purchase land, livestock, or raw materials for business	17	7,320
Purpose not stated	17	8,020
All loans	59	50,094

Source: PB Vor Limbach

Notes: Money values in Marks. This table summarizes all loans granted between December 1906 and October 1914. Two loans for which purpose was entered but illegible are tabulated in the "purpose not stated" category.

Table 7

Determinants of Loan Security

Binary Probit Estimates; Dependent Variable Equals One if Security is Not Just a Co-signer

Diestedde Cooperative Only

Variable	All Occupations		Farmers only	
	Estimate	T-Ratio	Estimate	T-ratio
Loan size in Marks	0.000825	2.576	.000063	2.300
Number of years since cooperative formed	0.014814	1.863	.006039	0.670
Dummy = 1 if this is member's first loan	-0.132243	-0.937	-.195346	-1.152
Dummy = 1 if member lives in Sünnighausen	0.3372833	2.208	.196951	0.973
Dummy = 1 if member lives elsewhere (not in Diestedde)	0.6021808	2.354	.580112	2.163
Dummy = 1 if member joined in year cooperative formed	0.085625	0.440	.200442	0.936
Occupation Kolon	-0.341470	-1.189	-.315594	-1.595
Occupation Kötter	0.0012881	0.005	--	--
Occupation Artisan	0.0002574	0.001	--	--
Constant	-0.746030	-2.276	-.532647	-2.327
Log likelihood	-250.016		-169.524	
Pseudo R-square	0.055		.040	
Number of observations	394		266	

Source: Computed from loans database.

Notes: Omitted occupation group is workers and others in the first regression, *Kötter* in the second.

Table 8

Loan Size

Quantile (Median) Regression

Diestedde and Hatzfeld Cooperatives

Variable	Estimate	T-ratio	Estimate	T-ratio
	Diestedde		Hatzfeld	
Number of years since cooperative formed	45.53	4.899	16.67	2.768
Dummy = 1 if this is member's first loan	559.82	3.531	26.67	1.311
Dummy = 1 if member lives in Sünnighausen	-343.75	-2.132	N.A.	N.A.
Dummy = 1 if member lives elsewhere (not in main town)	1409.82	2.513	66.67	2.546
Dummy = 1 if member joined in year cooperative formed	220.53	1.284	26.67	1.550
Occupation Kolon	841.07	2.214	--	--
Occupation Kötter	150.00	0.563	--	--
Occupation Artisan	568.75	1.974	--	--
Constant	-207.14	-0.622	40.0	1.268
Median of dependent variable	1000		140	
Pseudo R-square	0.075		0.030	
Number of observations	394		310	

Source: Computed from loans database.

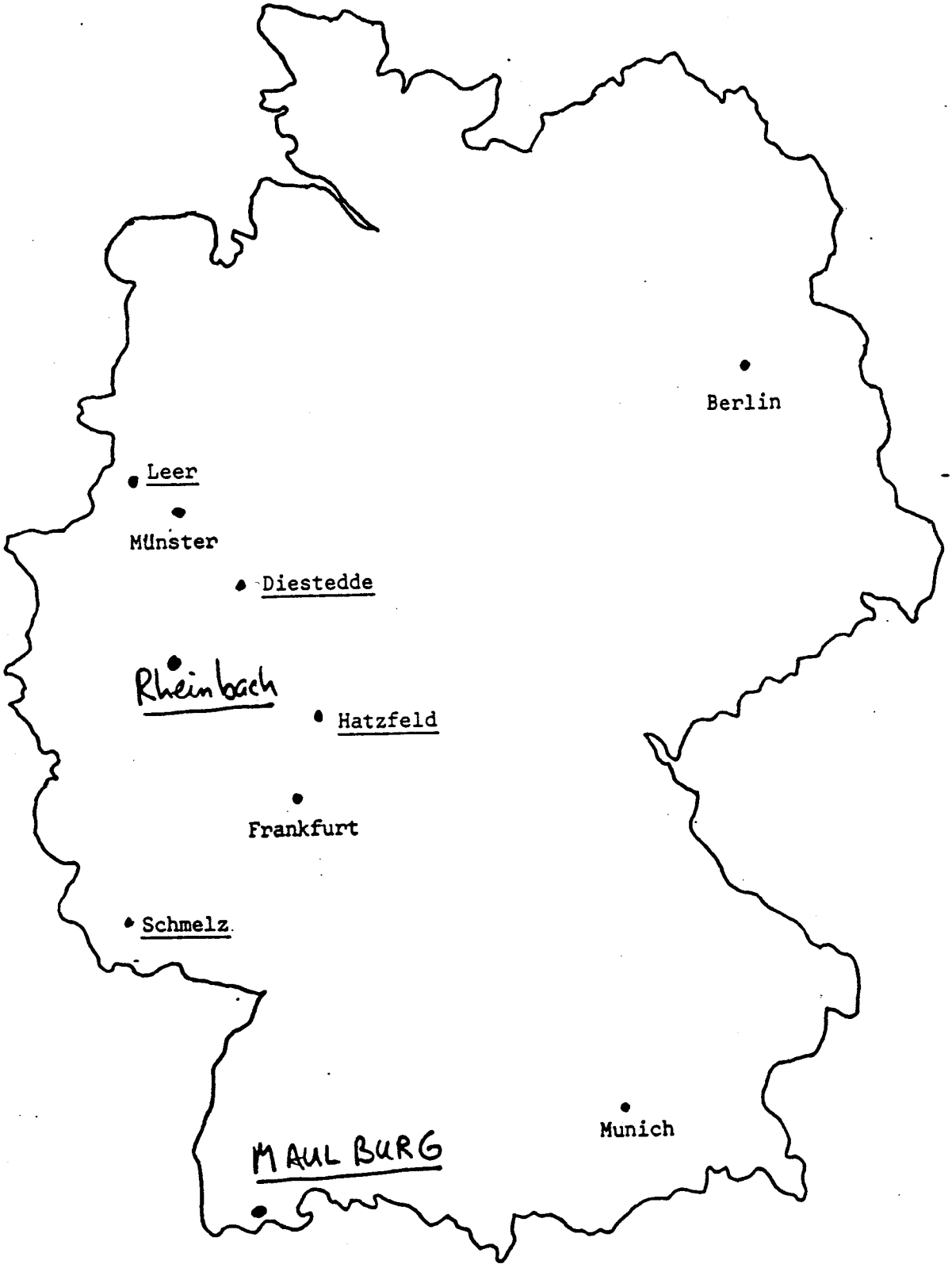
Notes: Omitted occupation group is workers and others. The Hatzfeld records do not contain information on occupation. Standard errors estimated by bootstrap.

FIGURE 1

Locator Map for the Cooperatives

(Current Borders of Germany)

Cooperative Locations Underlined



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