

7 Microfinance and Innovation

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INTRODUCTION

Financing innovation has been a long-standing concern. It has been prominent in the EU, where there is a widespread view that raising such finance is more difficult than in the US. Lack of finance regularly appears as a major issue in media debates, and this is supported empirically. It is cited as a major obstacle to innovation by firms responding to the Community Innovation Survey (CIS) (Canepa and Stoneman, 2002; 2008; Hölzl and Janger, 2011). At the time of the ‘dot com bubble’, venture capital became a major source of R&D and other innovation funding. Many small firms raised funds from this source for pursuing their (sometimes) new ideas. The ‘dot com crash’ led to less emphasis on venture capital’s innovation-supporting role of venture capital. It may well return to prominence in the future, but the economic crisis from 2008 and beyond has posed questions about the future role of all types of financing instruments, and many firms—even large and established ones—have been experiencing difficulty in raising finance.

Microfinance has proven resilient during previous financial crises,¹ and there are high hopes that microfinance will prove to be robust and even become more vital in the present economic crisis. It is hoped that microfinance will remain a viable tool for development and that it will support the financing of innovation both in developing and developed economies. This chapter explores the prospects for the role of microfinance in innovation.

Microfinance has long been proposed as providing instruments for stimulating entrepreneurship in developing and economically deprived countries and regions. The original motivation for this interest was mainly the alleviation of poverty. Even before the current economic crisis, microfinance had attracted attention from investment companies, given evidence that it could deliver impressive returns.

Policymakers, too, have given attention to microfinance, not just in the context of development, but also in terms of possible solutions to the problems small firms face in more industrialized countries. Most attention has been focused on issues such as support for peripheral and deprived regions and for

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1 socially excluded groups. Despite some rhetoric, relatively little analysis has
 2 dealt with microfinance as an alternative route to financing innovation.

3 This chapter reviews the relevant available material, focusing on empirical
 4 studies of microfinance, rather than on prescriptive arguments and proposals
 5 for sophisticated new designs for instruments. Microfinance *for* innovation
 6 has attracted little analysis to date, although there are streams of work on (a)
 7 microfinance *as* innovation itself—examining the blockages, barriers, success
 8 factors and agents of change, and (b) innovation *for* microfinance—the role
 9 of technological and organizational innovation in supporting microfinance.
 10 These can tell us things about the orientation to innovation of those involved
 11 in microfinance, and about the sort of innovation required for microfinance
 12 instruments to be able to support innovation more generally.
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15 MICROFINANCE

16 What Is Microfinance?

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 19 The World Bank defines ‘microfinance’ as financial services provision to
 20 low-income clients, including consumers and the self-employed (Ledger-
 21 wood, 2000). These clients are usually borrowers who are considered
 22 ‘unbankable’ by conventional financial services, and who, though they may
 23 well be experiencing financial difficulties, may have loan repayment rates
 24 as high as 97 percent (Callaghan et al., 2007).²

25 Microfinance can include small-scale financial services—loans, remit-
 26 tances, insurance and savings—that reflect the heterogeneity of their clients’
 27 financial needs. In practice, the term is often used more narrowly to refer
 28 to ‘microcredit’³ services, provided by microfinance institutions (MFIs), to
 29 deliver loans to unsalaried borrowers with little or no collateral. In most
 30 cases, MFIs make small loans to clients in developing countries. Such loans
 31 may be as little as \$50. In contrast, in the EU context, and reflecting the
 32 higher costs and incomes encountered, microcredit was defined (in 2003) as
 33 loans below €25,000 (EC, 2003b) that could help microenterprises—that is,
 34 businesses with fewer than ten employees including small entrepreneurs, and
 35 with turnovers (or balance sheet totals) less than €2 million (EC, 2003a).

36 Other financial products targeted at poor and low-income people are
 37 often included within the scope of microfinance. These include savings,
 38 insurance, money transfers and other similar instruments. MFIs provide
 39 various financial products and services, such as insurance and provision
 40 for deposits, as well as business training and networking opportunities,
 41 tailored to the needs of their specific client set.

42 Most of the relevant literature and discussion focuses on a fairly narrow
 43 set of instruments, especially microcredit. It remains to be seen how far
 44 the arguments and results that are presented in this literature might apply
 45 to deal with these different instruments. The shared characteristic of these
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services relates to their size—that is, they are *microfinancing*. Features such as the legal status of client enterprises, their collateral requirements, method of delivery, geographical context, funding institution or the use of services are a secondary matter in definitional terms (Callaghan et al., 2007).

A size-based definition reflects the general assumption that lower-income groups and those with restricted access to finance tend to use smaller-scale financial services. As microfinance is designed to help those excluded from access to formal financial services to fund their income-producing activities, build assets, provide stability and protect against risks, such services are not limited to credit and can include savings (deposit), insurance and money transfers. Microcredit and saving (deposit) services are most commonly researched. Microfinance has gained recent attention as an important new financial service. For example, the UN declared 2005 the ‘International Year of Micro-Credit’, and the 2006 Nobel Peace Prize was awarded to Muhammad Yunus, the founder of Grameen Bank in Bangladesh (Callaghan et al., 2007).

How Does Microfinance Work?

Microfinance services include loans, saving and money transfers—involving small amounts of money for clients that traditional financial institutions would not deem creditworthy. Typically, to acquire credit from an MFI, loans are secured against the ‘honor’ of a peer group of clients—that is, social collateral, rather than against personal collateral. If a client fails to make repayments, others in the lending circle will be denied future credit. Thus, the peer group takes on joint liability and acts to ensure loan repayment. Peer pressure encourages borrowers to be selective about their group members and to repay loans completely and on time. Hence, high repayment rates are common, but there are suggestions that, for various reasons, group lending mechanisms may not work well in Europe, or certain parts of Europe.

In terms of financing for innovation, it remains unclear just how far such financing encourages or discourages novel types of risk and enterprise. Social psychologists, for example, talk of ‘risky shift’ behavior when groups take riskier decisions than would their members do as individuals. A concise summary of 156 references on this topic was presented by Myers and Lamm as long ago as 1976.

Microfinance loans usually demonstrate shorter cycles than traditional commercial loans—for example, 6–12 months of payments and interest due weekly. Such shorter loan and payment cycles help the borrowers stay current, preventing them from being overwhelmed by large payments. This is the rationale for MFIs to charge interest rates that are relatively high (e.g., around 35 percent per year), in part because these cycles make running microfinance schemes expensive.

MFIs’ main sources of finance are usually charities, governments and international organizations. Donor and subsidy capital is not unlimited; the

1 microfinance industry may need to become more self-sufficient in financing if
 2 it is to grow enough to serve its potential market. Recently, structured financ-
 3 ing for microfinance institutions, offering returns to investors at market rates
 4 that are commensurate with risk, have been developed. Such transactions may
 5 increase the access of microfinance institutions to public financing markets.
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8 ACTORS IN MICROFINANCE AND MAJOR 9 TYPES OF MICROFINANCE INSTITUTIONS

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 11 Helms identifies *four categories of microfinance providers* (Helms, 2006,
 12 p. 35–57). He argues that each requires a proactive strategy of engagement
 13 to help providers achieve the goals of the microfinance movement:
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- 15 • *Informal financial service providers.* Moneylenders, pawnbrokers,
 16 savings collectors, money-guards, Rotating Savings and Credit Asso-
 17 ciations (ROSCAs), Accumulating Savings and Credit Associations
 18 (ASCAs) and input supply shops. As they share the same community,
 19 they understand each other's financial circumstances and can offer
 20 flexible, convenient and quick services. These services can also be
 21 costly, with the choice of financial products limited and short-term.
 22 Informal services that involve savings are also relatively risky.
- 23 • *Member-owned organizations.* Self-help groups, credit unions and
 24 hybrid organizations, such as 'financial service associations' and
 25 CVECAs (from the French *Caisse Villageoise d'Épargne et de Crédit*
 26 *Autogérée*, a self-reliant village savings and credit bank). They are gen-
 27 erally small and local, with good knowledge about each other's finan-
 28 cial circumstances; they offer convenience and flexibility. Although
 29 the costs of operation are low, these providers may have little financial
 30 skill, and can run into trouble in an economic downturn or dealing
 31 with complex operations.
- 32 • *NGOs (non-governmental organizations).* By the end of 2005, there
 33 were 3,133 microcredit NGOs lending to about 113 million clients.⁴
 34 These NGOs have spread around the developing world in the past
 35 three decades and proven innovative in developing banking techniques
 36 such as solidarity lending, village banking and mobile banking, which
 37 are claimed to have overcome barriers to serving poor populations.
- 38 • *Formal financial institutions.* Commercial banks, state banks, agri-
 39 cultural development banks, savings banks, rural banks and non-
 40 bank financial institutions. These are regulated and supervised bodies
 41 offering a wide range of financial services, usually controlling branch
 42 networks that can extend nationally and internationally.
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44 Typical microfinance clients are low-income individuals, especially in the
 45 developing world, who do not have access to formal financial institutions.
 46 Microfinance is often used to support or start small-scale entrepreneurial

or self-employed ventures, often household-based. With appropriate regulation and policy, MFIs can assist in solving the main problem of microfinance from the financial perspective of lenders ensuring that clients will repay loans and interest.

Major types of MFI are as follows:

- *The cooperative model.* Inspired by the success of cooperatives in Europe and North America at the end of the 19th century, this was the first model for microfinance in developing countries. The cooperative members are the owners, contributing to the equity capital through shares, and loans are granted only to them. Cooperative MFIs focus solely on the provision of financial services.
- *Solidarity credit groups.* Here, three to ten clients join a group to receive access to financial services (primarily credit), on the condition that they will have saved some money before being able to receive a loan. In addition, non-financial services are offered to group members, such as training or access to market information. Group members collectively guarantee loan repayment, and access to subsequent loans is given only once previous loans are paid in full.
- *Village banks.* The village bank is effectively a mix between the cooperative and solidarity group models, seeking to capitalize on the advantages of each. The village bank usually has fewer members than a cooperative, and is less formalized and complex in structure. Some international NGOs promote the establishment of village banks. Their main form of credit guarantee relies on peer pressure among members, as is the case in solidarity credit groups.
- *The linkage model.* This model builds on existing informal self-help groups, such as rotating credit and savings associations (Sika and Strasser, 2000). A self-help promoting institution (SHPI, usually an NGO) helps groups of 10–15 individuals through an incubation period after which the bank lends to the groups in a single or multi-period. Once the link is established, the SHPI supervises the loan portfolio. There is no particular incentive for the SHPI, however.
- *Microbanks with individual financial contracts.* There are other MFIs that are member-based, with members contributing to their management, ownership and control of the MFI. Microbanks (e.g., BancoSol in Bolivia) are a case in point, relying on individual contracts between the institution and its client. Although this type of MFI is closest to the conventional banks, the loan collateral approaches are usually non-conventional.

CAPITAL STRUCTURE AND THE EXPANSION OF MICROFINANCE

Most MFIs employ high leverage, and finance their operations with long-term, as opposed to short-term, debt. Highly leveraged microfinance

1 institutions perform better by reaching out to a wider clientele, enjoying
 2 economies of scale, and thus being better able to deal with moral hazard
 3 and adverse selection, enhancing their ability to deal with risk (Kyereboah-
 4 Coleman, 2007).

5 Various factors other than stage in the life cycle seem to be associated
 6 with the performance of MFIs. Bogan (2008), for example, finds MFIs' size
 7 of assets and capital structure to relate to their performance. Asset size is
 8 important for sustainability and outreach. A measure of grants received by
 9 MFIs from donors such as charities, governments and international orga-
 10 nizations as a percentage of assets is significantly and negatively related to
 11 sustainability, and is positively related to MFI cost per borrower. Bogan
 12 also finds evidence indicating that the use of grants drives down MFI's
 13 operational self-sufficiency. Bogan suggests that long-term use of grants
 14 means less of the competitive pressures associated with attracting market
 15 funding, and this may lead to less efficient operations. Since the results do
 16 not demonstrate that grants are related to greater or more costly outreach,
 17 it may be that (in some real-life circumstances) dependence on grants can
 18 hinder MFIs' development into competitive, efficient, sustainable opera-
 19 tions (Bogan, 2008).

20 A few years ago, one estimate determined that more than 67 million
 21 households were served by microfinance programs (Armendáriz de Aghion
 22 and Morduch, 2005, p. 3); but an earlier benchmark in 2004, established
 23 through an analysis of 'alternative financial institutions' in the developing
 24 world (Christen, Rosenberg and Jayadeva, 2004), counted approximately
 25 665 million client accounts. These used over three thousand institutions
 26 who were serving clients poorer than those served by the commercial banks.
 27 Of these accounts, 120 million were with institutions normally under-
 28 stood to practice microfinance. Gonzalez (2007) analyzed data from 2,207
 29 MFIs—representing 77 million borrowers in one hundred countries—and
 30 concluded that most MFIs are concentrated in South Asia and sub-Saha-
 31 ran Africa, while most borrowers are concentrated in South Asia and East
 32 Asia/Pacific region.⁵

33 34 35 MICROFINANCE IN EUROPE

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37 Though credit unions and similar instruments have already been in exis-
 38 tence for many decades, European microfinance is often traced to the intro-
 39 duction of microcredit in Central and Eastern Europe after the fall of the
 40 Berlin Wall. With the banking sector unable to respond to emerging needs,
 41 microcredit filled the gap by providing transitional support for people need-
 42 ing to enhance their livelihoods. In a relatively short time, MFIs in Central
 43 and Eastern Europe and in the newly independent states had attracted more
 44 than 1.7 million borrowers and 2.3 million depositors, with an average cli-
 45 ent growth rate of 30 percent, per year. In addition to MFIs, NGOs are also
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involved in the provision of microfinance in Eastern Europe. Commercial banks, too, are increasingly interested. They downscale in order to provide microloans for the poor. It is not clear from the published accounts if, and to what extent, small companies are explicitly included. The microfinance sector thereby continues to expand and become more structured.⁶

In Western Europe, microfinance remains a fairly recent phenomenon, despite some historical background through institutions such as the Raiffeisen Bank (Germany), lending charities (England) and the cooperative model of the ‘Casse rurali’ (Italy). The growth of MFIs has been more limited, although interest in their potential seems to be increasing. In the Netherlands, for example, the *Committee for Microfinancing* sees microfinance as having great potential in encouraging entrepreneurship, boosting economic growth and helping to integrate disadvantaged groups and reduce unemployment. This can be done through various local initiatives to help target groups access simple funding models and coaching networks (Committee for Microfinancing, 2007). Further, the Dutch government takes the position that ‘micro-credits must become available for individuals wishing to start their own business, with extra attention being paid to entrepreneurs in the . . . disadvantaged neighbourhoods’ (p. 5).

In other countries such as Spain, France, UK and Finland, too, microfinance has been supported as encouraging small and medium enterprises (SMEs). This is closely related to the tendency, in the EU, to see microfinance as primarily being a tool for *economic growth* and *social cohesion* (EMN/MFC/cdfa, 2007). SMEs are seen as drivers of job creation and economic growth—often as the only bright hopes for private sector employment in many disadvantaged regions. The argument that they can be important innovators is usually at best secondary. Although microfinance was initially viewed as an economic issue—promoting entrepreneurship—the correlation between lack of access to finance and social exclusion has been increasingly acknowledged. Many small and medium enterprises (SMEs) and families lack access to financial services despite the existing banking network, and financial exclusion is concentrated among those suffering from poverty and social marginalization. This has economic as well as social impacts. The ability of the banking system to reach and serve such small entities is crucial for the achievement of general socioeconomic improvement. Exclusion from banking services often constitutes a major obstacle to the launch of new business activities (Evers, 2007; Evers and Lahn, 2006). Microfinance services can fill this gap, since microcredit can help foster entrepreneurship by facilitating business start-ups, and granting microloans to unemployed and marginalized people can make them economically independent players, able to participate more fully in a financial society. Hence, microcredit should play an important role in strategies for growth, employment and social cohesion (such as the European Union’s Lisbon Strategy).

Micro and small enterprises form the core of the Western European economic system, representing 99 percent of the two million start-up

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1 enterprises that are created every year. One-third of these enterprises are
 2 launched by unemployed people.⁷ In the EU context, some recent research
 3 has studied influences on the capital structure of European SMEs (Viviani
 4 et al., 2008). Since nearly all (99.8 percent) of European companies (over
 5 twenty million firms) can be classified as SMEs, the EC defines these as ‘the
 6 real giants of the European economy’⁸ (Euractiv, 2006a; 2006b). The issue
 7 of the financing of SMEs is thus very important in the European context.⁹
 8 Viviani et al. (2008) suggest that debt is generally the most important fund-
 9 ing source for SMEs, as it represents 60 percent of total assets. The major
 10 part of the debt is composed of short-term loans, access to which may be
 11 less a strategic choice than an instantaneous and uncontrolled necessity.
 12 It seems that generally small European firms are likely to prefer internal
 13 finance to external capital. This means that they prefer to take loans than
 14 to receive investments that may reduce their ownership and control.

15 In the EU, the role of microfinance in regional cohesion policy has been
 16 reinforced through the programs *Joint European Resources for Micro to*
 17 *Medium Enterprises (JEREMIE)*¹⁰ and *Joint Action to Support Microfi-*
 18 *nance Institutions in Europe (JASMINE)*.¹¹ These do emphasize support-
 19 ing the Lisbon growth and jobs agenda, supporting technology transfer,
 20 start-ups, technology and innovation funds and microcredit; but there is
 21 little documentation of intentions, let alone results, in terms of the relation-
 22 ship between innovation and microfinance.

23 Though these programs were launched with innovation on their agenda,
 24 the anticipated contribution does not yet feature extensively in their docu-
 25 mentation. It is hoped that as experience grows, evidence of the scope of
 26 these MFIs to contribute to SME innovation will accumulate.

27 TWO SIDES OF MICROFINANCE AND INNOVATION

28 Although some of the core ideas of microfinance have been around for
 29 a long time, we are seeing new actors emerging, and established actors
 30 behaving in new ways. Thus, *microfinance can be seen as an innovation*
 31 *in financial services*, but *microfinance can also be used as an alternate*
 32 *means to finance innovation*. It may support adoption of innovation, fund-
 33 ing acquisition of basic equipment, and can facilitate larger investments
 34 by lengthening loans’ term structures. It can support improvement of the
 35 companies’ business practices by encouraging firms to elaborate improved
 36 business plans and models and to value their resources adequately.

37 MICROFINANCE AS ITSELF INNOVATION

38 Providing financial services to clients that are considered ‘unbankable’ by
 39 the conventional financial institution, MFIs also develop new techniques
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and methods to ensure that the services reach the targeted clients while yielding profits. MFIs innovate in terms of rules and procedures to ensure clients' repayment. This includes training policies and human resource management practices that aim at modifying financial facilities and structuring the working units to provide services. This resembles accounts of incremental innovation. The impact of the new microfinance service can be major, especially in the developing world, where many microfinance schemes and services bring new products to markets and provoke strategic changes in financial services, and impact upon clients by pressing them to undertake new business processes in order to achieve creditworthiness.

Among the innovative features of microfinance are the following:

- New methods of providing credit to the borrowers—for example, the usage of social collateral such as group guarantee instead of personal physical collateral, progressive lending approaches, peer pressure and peer monitoring.
- Approaches to mobilization of savings from the clients and linking credit provision to savings.
- Emphasis on social mobilization processes, involving awareness building and formation of self-help groups.
- Provision of other services, such as insurance, to cover risks and distress faced by the clients.

Microcredit is probably the most prominent of the financial service innovations covered by the term 'microfinance'. This reflects the universality of credit¹² and its importance in many development contexts. Other services that the term covers include microsavings, money transfer vehicles and microinsurance. These services have become diversified and attract not only small family businesses and other SMEs in developing economies, but also fast-growing small companies in developed countries. (For Spain see Estapé-Dubreuil and Torreguitart-Mirada, 2011; for summary of grey literature see Mersland, 2005).

INNOVATION FOR MICROFINANCE

Technological innovation, especially involving new information technology (IT), can be, and has been, exploited to improve the efficiency, scale and quality of microfinance services. Six technologies are catalogued by the Microfinance Gateway (CGAP) as having been adopted by MFIs:¹³

1. *Automated teller machines (ATMs)* facilitate transactions that would otherwise require staff attention—for example, retrieving account information, accepting deposits, drawing down on pre-approved loans and transferring funds. ATMs are most effective for MFIs that

1 accept savings and want to serve customers in multiple locations and/
2 or during non-business hours.

- 3 2. *Interactive voice response (IVR) technology.* This helps MFIs clients
4 to quickly receive information via telephone rather than by travelling
5 to a MFI office and requesting the service in person.
- 6 3. *Smart cards.* The use of smart cards can help MFIs deliver services in
7 managing savings accounts, disbursing loans or making transfers.
- 8 4. *Personal digital assistants (PDAs) and smart phones.* MFI staff can
9 benefit from the use of PDAs, which can be customized to run specific
10 programs to manage MFIs and clients' data and perform financial
11 calculations. PDAs can help officers who are away in the field provide
12 electronic data concerning clients/borrowers, which can be useful for
13 loan applications and review and approval.
- 14 5. *Biometrics technology.* New biometric methods of measuring indi-
15 viduals' unique physical characteristics, for purposes of identifica-
16 tion, are being adopted by MFIs who have become alerted to the
17 importance of data security. Some MFIs find low-cost biometric
18 technology to be preferable to passwords and PINs to access the
19 clients' financial data.
- 20 6. *Credit scoring.* Credit scoring systems analyze the pattern of clients'
21 historical data to predict how they will act in the future, and can help
22 MFIs make more reliable decisions on loan applications, collections
23 strategies, marketing and client retention. The scoring technology can
24 also be used in more advanced ways, such as pricing loans in relation
25 to individual client risks, and for provision against loan losses.

26
27 We can anticipate that innovative uses of IT will proliferate around MFIs.
28 Microfinance in general has already benefited from the Internet, which has
29 meant that people from across the world are now able to take part in the
30 microfinance movement. One example of how this new technology is being
31 implemented is in the creation of microfinance websites, such as [www.kiva-](http://www.kivaB4B.org)
32 [B4B.org](http://www.kivaB4B.org), which acts as an online broker connecting donors and recipi-
33 ents (who can be individuals, SMEs or MFIs).¹⁴ Another example is [www.](http://www.microplace.com)
34 [microplace.com](http://www.microplace.com), a for-profit subsidiary of eBay, which facilitates online
35 peer-to-peer micro lending, enabling people to invest in microbusiness.
36 A recent case is www.myc4.com (My Care For), which similarly enables
37 investors to invest in African microbusiness and SMEs.¹⁵ The term 'crowd-
38 funding' has been coined to capture the spirit of this development. Some of
39 the lenders here are explicit about their desire to fund innovations.¹⁶

40 As increasing numbers of people have access to the Internet, the Web or
41 social networking technologies can be used to promote the microfinance
42 movement and to provide funds for investment in microbusinesses. Web-
43 sites can link individuals and small businesses, including allowing lenders
44 to review the profiles of SMEs seeking financing. Models such as Kiva,
45 MicroPlace and MYC4 aim to attract social investors who want a personal
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connection as well as a return on investments (social and/or financial). Here, strategic use of Internet technologies (Web 2.0 and social networking) can be crucial. While more donors may be engaged, with more information resources, there are some concerns that online models are liable to be more distant and inflexible than conventional peer-to-peer lending, and that the use of the Internet will not only popularize microfinance among lenders, but also move it into closer rapprochement with established, corporate financial institutions. Such institutions, acting on a profit-driven model, may be less concerned with social benefits of microfinance, which is liable to be reflected in the sorts of project financed. Speculatively, this might have implications for the types of innovations fostered through microfinance. For example, innovations with quick yields might be favored as opposed to those that are ultimately more sustainable or more broadly socially beneficial.

MICROFINANCE FOR INNOVATION

While microfinance is widely celebrated as a possible solution to the financing problems of smaller firms and microbusinesses, there is remarkably little examination of the connection between microfinance and innovation. Whereas microfinance has been discussed overwhelmingly in terms of rationales other than boosting innovation, some of these aims are liable to be associated with innovative products, processes and practices. Reducing the cost of access to financial services, for example, should benefit companies directly, and facilitate their innovative efforts. The possibility of making larger investments improves the income and economic capacity of clients, and better valuation processes facilitate larger loans to existing clients and engage clients who would not be served otherwise. The possible links between microfinance and innovation mean that we need to consider the rationales for microfinance in more depth, and then consider different sorts of innovations and the role of finance in innovation.

THE FINANCING OF INNOVATIVE AND TECHNOLOGICAL FIRMS

Innovation in the private sector is often a response to competitive pressures and is intended to enhance competitiveness. Innovation activities can be hindered by financial constraints, though these will be experienced in different ways across various types of firm and innovative activities. There is strong evidence to support the idea that finance is among the most important factors hindering innovation. Canepa and Stoneman (2002) analyzed CIS2 data, concluding that financial constraints are the most important of the internal and external factors constraining innovation. Financial constraints

1 mean that projects did not start, or were delayed or postponed. These
 2 authors suggested that cross-national differences were in part explained by
 3 differences in financing across countries. Finance appeared to be more of a
 4 constraint in market-based systems than it was in bank-based systems, for
 5 instance. Reviewing results from the CIS3, Eurostat noted the following:
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7 Among the economic factors that are listed as part of CIS3 . . . inno-
 8 vation costs appear to be the most often cited reason why innovation
 9 activity is hampered, followed by a lack of appropriate sources of
 10 finance and excessive perceived economic risks. Within the EU, almost
 11 one quarter (24 per cent) of enterprises with innovation activity cited
 12 the cost of innovation as a hampering factor, while 19 per cent cited
 13 a lack of appropriate sources of finance and 17 per cent excessive per-
 14 ceived economic risks. (Eurostat, 2004, p. 33)
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16 Using more recent CIS data, Hölzl and Janger (2011) find that only skills
 17 shortages were more frequently mentioned as a barrier to innovation than
 18 financial obstacles, with skills and finance being respectively more impor-
 19 tant in technologically leading and lagging countries. Their detailed results
 20 are complex, but poorer development of financial markets also emerges as
 21 a source of more financial problems.
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24 **WHO FACES FINANCIAL CONSTRAINTS ON INNOVATION?**

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 26 The obstacles cited by Eurostat (2004)—cost of innovation, lack of appropri-
 27 ate sources of finance, excessive perceived economic risks—all have
 28 financial dimensions, and all tended to be more prevalent among service
 29 firms than those in the manufacturing industry. This could be related to the
 30 typically smaller size of service enterprises, but if one looks more closely
 31 at the results (Eurostat, 2004) it emerges that the high-tech services—com-
 32 puter and engineering business services, for example—report outstandingly
 33 high levels of finance-related problems. This is not to say that firm size was
 34 unimportant. The Eurostat report went on to note the following:
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36 As a general rule, the proportion of enterprises that regarded selected
 37 hampering factors as highly important decreased somewhat as the
 38 enterprise size-class increased. In other words, hampering factors affect
 39 proportionally more small enterprises than large ones. One of the most
 40 typical hampering factors faced by SMEs was a lack of appropriate
 41 sources of finance . . . Indeed, this category had the largest difference
 42 between the proportion of small and large enterprises citing it as highly
 43 important (6 percentage points), as 16 per cent of small enterprises
 44 reported a lack of appropriate sources of finance compared to 10 per
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cent of large enterprises. Other factors that were ranked relatively highly by SMEs were the high cost of innovation and the excessive perceived economic risks associated with innovation. (Eurostat, 2004, p. 49)

Figure 7.1 displays CIS3 results. Though smaller firms do report financing and related problems more often, these are problems that are widely experienced and while they are the most frequently cited, they are not the only problems encountered.

Innovation costs and lack of sources of finance generally emerge as more important for smaller firms in these sectors in CIS analyses, sometimes strikingly so, though not so much in the Netherlands. In some other studies, such as the ‘Innovation Benchmarking Survey’ conducted in the UK and US, this was less evident (see Figure 7.2). The reasons are not entirely clear, but may be to do with the survey samples being structured in different ways. The CIS surveys, which aim to be nationally representative, do depict a great deal of variation between EU countries, so we may need to be cautious about the Innovation Benchmarking results failing to show any dramatic difference in the incidence of finance-related problems in similar firms in the UK and US. Other dynamics may also affect just how and when finance is seen to be a problem.

SMEs have constrained funds of their own to use and may often be in a weaker position regarding the appropriability of the results of their innovation activities. Funding innovation through their cash flows, SMEs may find it hard to achieve sustained and high levels of commitment as required by some long-term innovation programs. Using R&D as a proxy for innovation, one study (Bond, Harhoff and van-Reenen, 2003) found real constraints in both the UK and Germany facing companies investing in innovation. Those companies who fund their innovation programs from their own resources prefer to use available funds, usually cash flows, which are typically very limited. Despite the well-developed financial and capital markets in the UK, there was more volatility and lower overall investment in innovation development there than in Germany, though how far this can be attributed to the financial system alone is debatable.

Generally, SMEs face considerable problems in seeking the funds necessary to innovate. Intangible activities such as R&D or innovation are considered riskier, so that SMEs face a higher cost of capital. Intangible assets may be undervalued when being used as collateral for credit, reducing the amount of capital debt that can be raised. Considering this, SMEs investing in technology and innovation are more likely to find difficulties in accessing credit than are those other SMEs that focus on more traditional businesses! High transaction costs, the risks connected with their business and limited capacity to appropriate innovations combine with the difficulties of lenders understanding the real value of innovative projects, to limit the capability of innovative SMEs to raise external funds (Stiglitz, 1993).