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FINANCIAL INNOVATION IN AGRICULTURE

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ABSTRACT – Financial innovation in agriculture
The process of financial innovation is a patchy phenomenon, far from exhausted, that has left some areas of the agribusiness almost unaffected. Looking at the financial arena as a huge laboratory, a set of new tools could be taken advantage of, in order to exploit the potential of finance and hence to speed up the flight to quality in agriculture, well beyond the scope of agricultural lending; these tools include weather derivatives, cat bonds, micro-finance, mutual guarantee institutions, and the JEREMIE (Joint European Resources for Micro to Medium Enterprises) initiative.

After identifying the strategic areas of the financial system that are likely to prove most beneficial to the agribusiness, the toughest task has to do with making all relevant information available to the small enterprises prevailing in agriculture, not to mention the micro ones. A success story has been developed by the Louisiana Business & Technology Center in Baton Rouge (LA, USA) after Hurricane Katrina: a *mobile classroom* was set up to reach the unserved parishes in rural Louisiana with counselling, encompassing managerial finance, and also to be utilized as a *business incubator on wheels*.

The use of this 30-seat converted semi-trailer entails an innovative way of delivering financial assistance and services: therefore, it can be taken for a meaningful change in the *place* factor of the marketing mix traditionally resorted to by banks and, as such, may fit into the concept of financial innovation. The ambitious results attained over there do not only give satisfaction for international interest, but also sound like an invitation to replicate them by adopting this case study as a contribution to foster long term, sustainable growth in agriculture.

Keywords: cat bonds, financial innovation, JEREMIE, micro-finance, weather derivatives

INTRODUCTION

The empirical evidence justifies the statistical studies that describe the service industry as one of the three economic sectors and label it as the tertiary sector of the economy; the secondary sector is approximately the same as manufacturing whereas the primary sector consists of agriculture, forestry, fishing, and extraction such as mining. The activities performed in the service sector basically aim at improving productivity, performance, potential, and sustainability by using knowledge and time.

A substantial shift has been observed for the last thirty years from the primary and secondary sectors to the third one in industrialised countries; actually, economies tend to follow a pattern evolving from heavy reliance on agriculture and mining, toward the development of manufacturing (for instance: automobiles, textiles, shipbuilding, and steel), and finally toward a more service-based structure. As a result, the service industry is now the largest and fastest growing sector of the economy in the Western world.

Banking, insurance, and – in more general terms – financial services spearhead the market segments in this industry. However, the situation is not as clear-cut as it might seem: despite the categorizations set forth, there are links between the financial arena and the primary sector that deserve much more attention than they have been paid so far; this is especially true of Italy, where agriculture has been characterized historically by a series of inequalities, both regional and social.

A few remarks

To make a long story short, the majority of agricultural workers struggled under harsh conditions as waged labourers or owned derisory plots of land, too small for self-sufficiency until the middle of the nineties. Afterwards, large tracts of land were redistributed to landless peasantry, which allowed to absorb greater amounts of labour and encouraged a more efficient land use; nevertheless, many farms are still undersized and, as such, not viable.

Additional drawbacks stem from being most of the firms in the primary sector owned and operated by families. No surprise that managerial criteria do not fully display their potential in agriculture: in particular, finance can be expected to speed up the flight to quality in this market segment, being money an essential input as well as a scarce resource worldwide; in turn, financial innovation is likely to upgrade the way in which the agribusiness is currently managed and hence to spur its long-term, sustainable growth, not only in Italy.

Based upon these thoughts, it must be recognized that both scholars and practitioners have tried to cope with emerging issues in managerial finance for a long time, thus generating a remarkable quantity of high quality information; however, much room remains for financial management to progress in the agribusiness and the unexploited opportunities cannot be overlooked under the troublesome conditions that continue to affect the economic scenario. Therefore, the main goal is to contribute to bridge the gap between theory and practice, as far as promoting a more massive recourse to the best practices that the financial side of the service industry can make available to the primary sector, with the local perspective to be properly combined with the global one, according to the *glocal* approach.

MATERIAL AND METHOD

Toward this objective, the starting point can be identified with a critical overview of the empirical research and theoretical models developed in the field of financial innovation, so as to end up with a survey of the most innovative features of the financial system. The next step has to do with sorting out the strategic tools that are best suited to satisfy the financial needs of the small companies prevailing in agriculture, not to mention the micro ones: in a few words, it is a matter of realizing what's new in the financial arena that these firms might most take advantage of.

Giving priority to the real-world problems in the agribusiness, the most challenging issues deal with how to channel all relevant information to end-users, such as farmers scattered throughout the country, including micro enterprises located in areas where it would be hard to find a bank branch; this exercise could prove even tougher if it had to be carried out in a disaster management framework, which by the way agriculture should not feel unfamiliar with, being a weather sensible market segment. All in all, it is worth assessing how firms that belong to the primary industry can be made aware of the most innovative ways designed to improve their financial management, given their traditional profile, and can be finally induced to rely on these financial tools, so as to benefit from them as much as possible.

In anticipation of the wide choice of encouraging results that this investigation is likely to produce, it should be extended to how to replicate them, which is another exacting task: by common opinion, experiments are reserved to applied sciences and thus excluded from the methodological set available to finance; yet, the practical outcome, consisting of a more massive recourse to financial innovation in agriculture, should be greatly appreciated. The positive effects that this ongoing process might possibly generate in the primary sector – as well as in any other industry – promises to make the required efforts rewarding, in sight of fostering sustainability and growth in the agribusiness over the long run.

Highlights of the process of financial innovation

For the last fifty years financial innovation has been deeply transforming the financial system as a whole and each of its pillars, namely financial services, financial institutions, and the market segments that the financial arena is made up of (FORESTIERI G., MOTTURA P., 2005). Assuming the broad perspective that the global competitive challenge imposes, any change in these elements can be classified as a sort of financial innovation, including new ways of delivering traditional financial services: it is not just a case that the spread of information technology has prompted *process innovation* in the financial industry since the eighties (CARANZA C., COTTARELLI C., 1986), to the benefit of both suppliers and consumers of financial services; further developments are on the cards, as implied for example by the advent of what has become known as *e-finance* (MISHKIN F. S., EAKINS S. G., 2009).

The financial crisis that began in the summer of 2007 caused – among other things – a big financial squeeze, that triggered a global brainstorming about the future of both traditional and alternative funding channels, caught between uncertainty and instability. Since the financial sphere of the economy is assumed to efficiently support the real one, the underlying question that has been gaining momentum is whether banks are enough: for sure, they keep on performing vital functions but non-banking institutions have increased their competitiveness by supplying even too creative products, in an effort to sustain company liabilities and to assist the same target market with risk management techniques.

At the same time, the issues concerning risk management have been increasingly dealt with, to the point that nowadays risk is perceived as a multifactor concept to be analysed from several perspectives. As a consequence, its theoretical roots have been explored in different fields, well beyond the original scope of the insurance industry and its own actuarial and statistical framework: for instance, the topics that have been most recently covered in corporate finance aim at studying risk within the value maximization context and at developing strategies for mitigating risks; by contrast, banking has been more and more concerned with risk capital and capital requirements, as the reform of the 1988 Basel Accord culminated in what bank supervisors refer to as Basel II (BANK FOR INTERNATIONAL SETTLEMENTS, 2004), and the call for Basel III should further enhance the role of risk assessment and measurement, thus compounding fears of credit rationing among borrowers.

Recent developments in the agribusiness

Investigating boundaries and manifestations of such a blurred concept as financial innovation can provide an idea of just one side of the coin; on the other side, attention has to be focused on the financial needs that remain unsatisfied in agriculture or that are worth stimulating to attain a higher level of managerial finance standards. As a matter of fact, innovation has made both agriculture and finance extremely diversified sectors, as it can be argued by pointing at agricultural loans, though the process of financial innovation has left some areas almost unaffected in the agribusiness and its management skills need to be improved in a way that is *right for the times*, in general terms.

As if the options that have been crafted over time to populate the financial world were not enough, further strategic tools may be created for agriculture, provided that the process under investigation is far from being exhausted. A supporting argument leads to consider the potential for weather derivatives in our new, climate-changed world: they started to be traded in the United States at the end of the nineties, in an attempt at devising new ways to manage – and, in particular, to hedge – weather risks; direct exposure to them can involve as many as one million firms estimated in agriculture, forestry, and fishing in Italy (PACELLI V., 2008).
In these market segments hedging may also be pursued by making recourse to catastrophe (briefly, cat) bonds, since they allow to transfer the risk of being affected by natural disasters to investors, who may finally bear the resulting losses, if specific trigger conditions are met. No question that the introduction of these bond issues sounds reassuring, but their high degree of sophistication prevents most of the agribusiness from adopting them; anyhow, not even private equity and venture capital have been as widely accepted as it could be expected in agriculture, in spite of the efforts undertaken to promote these financial tools that are designed to provide financial support to innovative small enterprises showing promise of job creation, economic growth, and international competitiveness.

The role of micro-finance

The unsatisfactory proportion of equity to debt financing should fuel feelings of pessimism, since indebted companies' vulnerability would rather persuade to strengthen their capital base and the same conclusion must be drawn by discussing the issues concerning their credit rating. Against this theoretical background, there are reasons to believe that benefits can be more easily reaped by resorting to micro-credit in the agribusiness, featuring a productive structure that is mostly built upon small firms, relatively closed to outside investment: while the recent financial crisis has led to the tightening of credit standards, above all by the largest banking groups (Bank of Italy, 2010), the recourse to financial institutions involved with micro-credit has been taken into increasing consideration as a part of the exit strategy; this trend is likely to continue and eventually become more marked, since the difficulties to access credit remain substantial compared to the years preceding the crisis.

In fact, micro-credit allows to borrow a smaller amount of money than the loan size usually offered by commercial banks, which may help companies to survive and hopefully grow, despite being denied access to traditional banking and related services, mainly due to the collateral aspect of loan requests. However, the advantages associated with micro-credit cannot be thoroughly grasped if its description is conditioned upon its smaller size than traditional bank loans: new institutions specializing in this market segment have contributed to its success by developing innovative distribution channels and new ways of delivering loans can be included within the concept of financial innovation, regardless of their amount; of course, *product innovation* does not tell the whole story, because *product* is only one of the *four Ps* accounted for by conventional studies about the marketing mix (MCCARTHY E. J., 1981), the other variables being *promotion* and *price*, besides *place*.

Furthermore, micro-credit can be seen as a sub-set of micro-finance, encompassing micro-lease and micro-equity financing, as well as micro-insurance policies and even micro-deposits, to the benefit of the agribusiness as of any other productive sector. To make these financial services far more attractive, they perform a social role that adds to the functions historically attributed to the banking system and leads to evoke the concept of *ethical finance*: its distinctive trait has to do with social responsibility issues, so far away from the profit maximization goals that theorists have recommended and entrepreneurs have pursued for decades, thus postponing stakeholders' to stockholders' welfare; this point can be stressed by arguing that micro-finance calls for attention as an alternative to both traditional banking and illegal practices, such as usury.

Some strategic tools

The role that micro-finance is likely to play may be unfortunately minimized if it is confined to the underdeveloped environment in which Nobel prize Muhammad Yunus made initially recourse to this financial tool, in order to bring livelihood opportunities to the doorsteps of poor people. Indeed, micro-finance has proven useful elsewhere and its specific features make it a strategic way out when it comes to recover after a natural disaster: if this is the case, severe though basic financial needs, requiring a huge amount of money overall, dramatically surface all together and all at a sudden in different market segments; among and across them, special consideration has to be devoted to family-owned small companies that abound in agriculture and represent a unique category of firms for mixing up the characteristics of enterprises and households (CUCCULELLI M., MICUCCI G., 2008).

Similar comments, suggesting an unconditioned attitude, apply to institutional programmes based upon new financial engineering instruments, that can be usefully resorted to in agriculture, not necessarily in an underdeveloped environment or in an impacted area. The set of these instruments includes JEREMIE (Joint European Resources for Micro to Medium Enterprises), a joint initiative of the European Commission and the European Investment Fund with the European Investment Bank, aimed at improving access to finance for medium, small, and micro enterprises, in particular through the supply of micro-credit, venture capital, guarantees, and other forms of innovative financing; announced in 2005, this programme is designed to allow managing authorities to use some of their Structural Funds allocations to invest in revolving funds – rather than once-off grant financing – and so encourage recyclable forms of assistance, while discouraging an exclusive reliance on grants.

Public-private partnership innovative models, such as JEREMIE, pave the way for an even wider range of strategic tools that financial management in agriculture can usefully resort to. The underlying *join for change* philosophy may convey benefits that would be out of reach to firms on a case by case basis, since each of them alone could not take advantage of existing economies of scale to the same extent: for instance, the increasing role played by mutual guarantee institutions gives ground for optimism because of the widely felt difficulty of gaining access to small business finance (COLUMBA F., GAMBACORTA L., MISTRULLI P. E., 2010); the opportunity to issue district bonds acts as a reinforcement, with agriculture standing in a prominent position, due to the growing number of agrifood and rural districts.

RESULTS

Looking at the financial arena as a huge laboratory, with both physical and virtual features, there are many success stories that experimental studies have resulted in and some interesting case studies involve the primary sector; in an effort to choose the ones that most deserve consideration, it seems convenient to share the fruitful – though burdensome – experience made in the Abruzzo region, in Central Italy, in the aftermath of the earthquake that devastated L'Aquila and its environs on April 6, 2009 (EARTHQUAKE ENGINEERING RESEARCH INSTITUTE, 2009). Under the critical circumstances that can be easily imagined, a positive sentiment has been brought about by a couple of innovative solutions that fall within the concept of *ethical finance* and that may prove beneficial to the agribusiness in that area.

On one hand, micro-finance has been emphasized by a project known as *Microcredit for Abruzzo*, that was developed by Consorzio Etimos and presented on July 22, 2010. This programme has been arranged so as to draw upon donations managed by the Italian Department of Civil Protection and to profit by the cooperation offered by several partners; they include a number of local banks, mostly mutual banks representing a category of banking intermediaries that traditionally provide financial services for agriculture.

On the other hand, right after the earthquake, a generous contribution to the University of L'Aquila was announced by Parmalat S.p.A., a global player active in milk and diary products and fruit-based beverages, with one third of the money donated by the company's employees: the grant was intended to be used for a single project, tied to the donor's multinational image and in fact allowed to create a micro-biological laboratory for both research and teaching purposes, tailored to the field of interest of the contributing firm; further activities could be eventually carried out in cooperation with local agricultural firms so as to support their recovery. Despite the difficulty of finding adequate premises, due to the pervasiveness of damage on campus, the *Parmalat Lab* was opened on July 15, 2010 and a scholarship was additional offered to cover its operating expenses during the first year.

CONCLUSIONS

Lessons learned encompass some conclusions about the relevant role that can be played by Universities, especially if they are located in an impacted area, and by their cooperative efforts, such as the ones jointly undertaken by the University of L'Aquila and Louisiana State University and Agricultural & Mechanical College (LSU) in Baton Rouge (LA, USA) on *redevelopment after a natural disaster*, a program sponsored by the US State Department. To make knowledge and expertise spread, as the academic mission implies, special attention can be drawn to the *mobile classroom* that has been set up by the Louisiana Business & Technology Center, an integral part of the E. J. Ourso College of Business at LSU: it is a converted semi-trailer that can be utilized also as a 30-seat *business incubator on wheels* to reach the unserved communities in rural Louisiana and encourage to seek further assistance; thanks to this entrepreneurial program, intensive business counselling has been provided, first of all to farmers in some of the areas most severely impacted by Hurricane Katrina, which originated an extensive need to educate agricultural firms on various recovery programs, loans, grants, and tax incentives.

The evidence built up over there leaves no doubt that financial innovation can help to upgrade financial management and to eventually benefit from greater access to credit in agriculture, like in all other industries. In fact, money should fully display its potential as an input, as important as any other one, even in this most traditional market segment: useful insights can be gained by assessing the leverage factor, that is defined as the ratio of total debt to total assets or total value of the firm; leverage, if used successfully, increases the returns to the owner(s) of the firm whereas, if unsuccessful, can result in inability to pay fixed charge obligations and, ultimately, in difficulties leading to financial reorganization or bankruptcy.

Further issues that deserve consideration have to do with credit rating, provided that a well managed firm from the financial viewpoint could expect to be better rated and hence to pay a relatively lower cost of capital. To sum up, new strategic tools come into being daily in the financial arena that are likely to speed up the flight to quality in agriculture, though the hardest task is to make aware of them the multitude of small enterprises prevailing in this market segment: within this framework, even a change in the *place* factor of the marketing mix historically developed by banks can fit into the concept of financial innovation, as shown by the recourse to the *classroom on wheels*; the ambitious results achieved by its use do not only give satisfaction for international interest, in line with the more and more widely accepted *glocal* perspective, but also sound like an invitation to replicate them by adopting this case study as a contribution to foster long term, sustainable growth in agriculture.

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