



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Cooperative financial institutions: A review of the literature

Donal McKillop^{a,*}, Declan French^a, Barry Quinn^a, Anna L. Sobiech^b, John O.S. Wilson^b

^a Department of Finance, Queen's Management School, Queen's University Belfast, BT9 5EE, UK

^b Centre for Responsible Banking & Finance, School of Management, University of St Andrews, Fife KY16 9SS, UK

ARTICLE INFO

Keywords:

Cooperative financial institutions
Literature review

ABSTRACT

Financial cooperatives play an important role in the financial systems of many countries. They act as a safe haven for deposits and are major sources of credit for households and small- and medium-sized firms. A not-for-profit orientation (in many cases) and a focus on maximising benefits to members have ensured the enduring popularity and sustainability of financial cooperatives. This is particularly evident since the global financial crisis when financial cooperatives continued to extend credit to members as many profit-orientated commercial banks restricted credit to households and firms. The overarching theme of the first part of this review is the structural and behavioural characteristics of financial cooperatives. In this part we consider, the origin and diffusion of financial cooperatives, network arrangements, the business model, relationship banking, balancing the interest of members, tax treatment and regulatory framework. The second part has performance and contribution to the real economy as the overarching theme. In this part we consider, efficiency and sustainability, mergers, acquisitions and failures, the benefits (and challenges) of FinTech and the contribution of financial cooperatives to the real economy including during times of crisis. The paper concludes with a summary of what we now know (and do not know) about financial cooperatives and provides suggestions as to where future research may usefully concentrate.

1. Introduction

Cooperative financial institutions comprise a variety of member-owned financial intermediaries variously referred to as credit unions/caisse populaires, savings and credit cooperatives, cooperative banks and Shinkin Banks. Credit unions/caisse populaires have a strong presence in North America, while cooperative banks are the dominant organisational form in many European countries. The institutional structure, legal and regulatory status, product offerings and business models varies across countries, and especially between advanced and emerging countries (Cuevas & Buchenau, 2018; Cuevas & Fischer, 2006). For example, credit unions/caisse populaires are not-for-profit entities, which provide services to members. Shinkin banks are also not-for-profit but restrict loans to members while accepting deposits from non-members. Cooperative banks are for-profit organisations that provide services to both members and non-members. However, unlike shareholder-based commercial banks, cooperative banks do not seek to maximise profits but rather generate profit in order to bolster capital and fund long-term growth.

Four cooperative principles shape the structure of cooperative financial institutions and set them apart from shareholder-based banks. *Self-help*: Cooperatives are member-owned and member-governed

financial organisations that aim to achieve pre-determined economic and social objectives. *Identity*: A majority of cooperatives have a membership that is concentrated at a local or regional level and cater to the financial needs of individual members, community groups and small firms. *Democracy*: Each member has only one vote, irrespective of how many shares held. This reduces the ability of any one member or group of members to impose a controlling influence on the direction of the institution. *Cooperation among cooperatives*: Considered individually, financial cooperatives are often small. However, as they do not typically compete with each other (due to self- or regulatory-imposed limits on geographic spread), they have formed cooperative arrangements that have enabled them avail of scale and scope economies. In Europe, cooperative banks have developed prominent central institutions and formed network alliances. These networks range from loose associations to cohesive groups, and can be simple or complex multi-levelled structures (Bülbül, Schmidt, & Schüwer, 2013; Fonteyne, 2007).

The above principles confer a number of potential benefits on financial cooperatives. First, saving members and borrowing members, as owners of the financial cooperative, are inextricably bound to its fortunes. This may help mitigate the conflict (visible in shareholder-based financial institutions) between borrowers (who want as low cost credit as possible) and savers (who want as high a return on savings as

* Corresponding author at: Queen's University Belfast, Department of Finance, Queen's Management School, Riddel Hall, 185 Stranmillis Road, Belfast BT9 5EE, UK.
E-mail address: dg.mckillop@qub.ac.uk (D. McKillop).

possible). Second, as membership is structured around a common identity usually based on geographic location, information asymmetry (adverse selection) is reduced leading to better loan decisions, as borrowers are less able to under-represent risk. Furthermore, as borrowers have social and business connections through the common identity to other members there may be large informal costs of renegeing on loan repayments thus enabling social capital to be used as 'collateral' in lending and in so doing reduce moral hazard (Fonteyne & Hardy, 2011; Guinnane, 2001). Third, depositors (as owners) are likely to maintain savings in periods of economic uncertainty thus ensuring retail funding stability. Fourth, given that employee remuneration is not linked directly to profits or share option arrangements, this may encourage management to be more circumspect in their behaviours relative to management in shareholder-owned banks (van Rijn, Zenga, & Hueth, 2019).

Arguably, there are also a number of disadvantages to the cooperative structure. First, transfers to reserves from profits are the main, if not only, source of capital accumulation for many cooperative financial institutions.¹ Second, as there is no externally held capital and no tradable ownership rights, cooperative institutions face no (or weak) discipline from the market in corporate ownership and control. Third, the one member one vote system arguably means that members have insufficient incentive to engage in monitoring as their ability to exercise control is weak and potential rewards are low.² In such circumstances, agency costs may be high and adversely affect efficiency and performance. In particular, management may have greater opportunity to indulge in discretionary expenditures and the pursuit of managerial emoluments (expense preference behaviour).

The remainder of the paper offers a review of the economics and finance literature on financial cooperatives published over the course of last five decades. The review is partitioned into two parts. The overarching theme of the first part is the structural and behavioural characteristics of financial cooperatives. In this part we consider, the origin and diffusion of financial cooperatives, network arrangements, the business model, relationship banking, balancing the interest of members, tax treatment and regulatory framework. The second part has performance and contribution to the real economy as the overarching theme. In this part we consider, efficiency and sustainability, mergers, acquisitions and failures, the benefits (and challenges) of FinTech and the contribution of financial cooperatives to the real economy including during times of crisis. We conclude with a summary of what we now know (and do not know) about financial cooperatives and provide suggestions as to where future research may usefully concentrate.

2. Part one: structural and behavioural characteristics

With the structural and behavioural characteristics of financial cooperatives as an overarching theme, part one of this review considers, under a series of sub-themes, the origin and diffusion of financial cooperatives, network arrangements, the business model, relationship banking, balancing the interest of members, tax treatment and regulatory framework.

¹ In certain cases, they may have an option of raising capital from their members through issuing various types of subordinated shares that pay interest but do not carry voting rights, (Birchall, 2013a, 2013b).

² Gorton and Schmid (1999) and Leggett and Strand (2002) provide evidence regarding agency costs and control at financial cooperatives. Goth, McKillop, and Ferguson (2006) note a lack of member engagement and lack of board monitoring at financial cooperatives, while Gomez-Biscarri et al. (2019) note that credit union members act as a disciplining mechanism by withdrawing deposits from credit unions engaged in risky lending activities. van Rijn et al. (2019) note that salaries and benefits paid to managers are typically lower than those paid by other financial institutions, and this leads credit union managers to pursue less risky strategies than mainstream banks.

2.1. Origin and diffusion

Cooperative financial institutions originated in Germany in the mid-19th Century as philanthropic self-help institutions designed to encourage workers to join resources and accumulate savings. Hermann Schulze-Delitzsch (1808–83), a politician and judge, founded the first urban credit cooperative in 1850. Friedrich Wilhelm Raiffeisen (1818–88), a mayor in Western Rhineland, formed the first rural credit cooperative in 1864. Raiffeisen emphasised Christian principles as the motivation for the establishment while Schulze-Delitzsch was mainly concerned with promoting economic self-sufficiency (Aschhoff, 1982; Guinnane, 2001, 2002). A principal purpose of early credit cooperatives was to draw outside funds into communities that needed them, not as charitable donations, but as loans to be repaid (Isbister, 1994). The model quickly spread to other countries in Europe. First to surrounding countries, namely Austria, Italy, Switzerland and the Netherlands then west to Belgium, France and Spain and eventually north to Finland and Sweden (Birchall, 2013b; Colvin & McLaughlin, 2014).³ Inspiration for cooperative ideals was also found in Great Britain where the Rochdale Society of Equitable Pioneers, a group of 28 workers, came together in 1844 to open their own cooperative store selling food items (Merrett & Walzer, 2004; Walton, 2015).⁴ A further example was in New Lanark, Scotland where Robert Owen (1771–1858) and other mill owners agreed to limit their returns on invested capital and to use residual profits that accrued for the benefit of the entire community (Royle, 1998).

At the beginning of the 20th Century, the financial cooperative concept spread from Europe to North America. The first financial cooperative (caisse populaire) was established in 1900 in Canada (Quebec). Alphonse Desjardins (1854–1921), first a journalist and then a parliamentary reporter, moved by the victimization of the poor by loan sharks established the first caisse populaire (people's bank) in 1900 in his home town of Lévis in Quebec. He proceeded to set up a further 150 over the next fifteen years (MacPherson, 1979; Mook, Maiorano, & Quarter, 2015). Desjardins helped establish the first US credit cooperative in Manchester, New Hampshire, in 1908. This was based around a Franco-American parish administered by Monsignor Pierre Hevey and it initially served French-speaking immigrants to Manchester from the Maritime Provinces of Canada (Moody & Fite, 1984; Walter, 2006). The mantle for credit cooperatives in the US was then taken up by Pierre Jay (1870–1949), the commissioner of Banks in Massachusetts, and Edward Filene (1860–1937), a Boston businessman and philanthropist. These individuals promoted and were instrumental in the passing of the Massachusetts Credit Union Enabling Act in 1909, the first credit union legislation in the US. A further person of influence in the US was Roy Bergengren (1879–1955) who along with Filene formed the Credit Union National Extension Bureau which was tasked with lobbying for credit union legislation at both State and Federal level. In 1934, the Federal Credit Union Act was passed. This Act encapsulated much of Bergengren's interpretation of what credit unions are, how they should be structured and how they operate in law (Kaushik & Lopez, 1994; Moody & Fite, 1984). During the remainder of the 20th Century, the model continued its spread and now extends to most of the Anglo-Saxon world and beyond (Fonteyne & Hardy, 2011).

³ Credit cooperatives proved less successful in other European countries notably Belgium, Ireland, Spain and Denmark (Colvin & McLaughlin, 2014). In Denmark, for example, rural communities had already succeeded in adapting another form of financial institution, the savings bank, to serve the needs of the small borrowers who in other countries were the main clientele of credit cooperatives (Guinnane & Henriksen, 1998).

⁴ The Rochdale principles include open, voluntary membership to all; democratic control of the society; a governance structure where each member is entitled to one vote regardless of the number of shares owned; a limited return (if any) on equity capital; and the return to members of the cooperative's surplus in proportion to their patronage.

Table 1
Characteristics of cooperative banks by country.

The table displays characteristics of cooperative banks and national associations for cooperative banks by country for end year 2018. The data is from the European Association of Cooperative Banks: Key Statistics, December 2018.

European Union countries	Total assets (€ 100 mil.)	# employees (thou.)	# customers (thou.)	# independent cooperative banks	# branches domestic	# members (thou.)	Domestic deposit share (%)	Domestic loans share (%)	Mortgage share (%)	Market share SMEs (%)
Austria	326.2	30.1	4709	403	1746	2361	36.8	35.3	35.9	n.a.
Bulgaria	2.9	2.0	1785	n.a.	308	6.4	5.6	3.9	4.1	n.a.
Denmark	193.7	3.4	1159	56	42	493	5.1	31.4	41.3	n.a.
Finland	140.4	12.2	4282	156	365	1911	38.4	35.5	39.5	39.6
France	3981.4	327.9	113,500	86	21,055	27,000	62.7	60.3	76.9	50.3
Germany	1293.2	174.3	30,000	875	10,520	18,560	21.9	21.9	30.6	35.8
Greece	2.8	0.9	412	7	110	179.2	1.0	0.8	n.a.	18.0
Hungary	7.8	7.4	1390	19	1019	29.2	7.3	8.3	6.5	11.4
Italy	213.7	29.4	6000	268	4233	1290	7.8	7.2	10.1	n.a.
Lithuania	0.4	0.5	116	49	110	108.4	1.4	1.4	1.2	n.a.
Luxembourg	8.8	0.6	121	13	38	33.9	21.0	16.0	14.0	8.0
Netherlands	590.4	35.9	8300	101	409	1900	33.3	n.a.	19.9	39.0
Poland	42.4	31.0	n.a.	549	4415	951.7	10.1	6.9	5.1	12.1
Portugal	18.8	4.1	1643	80	657	425.3	7.5	5.4	3.1	9.5
Romania	0.3	1.9	610	40	738	656.8	n.a.	n.a.	n.a.	n.a.
Slovenia	1.0	0.3	90	1	81	0.3	3.1	2.3	n.a.	n.a.
Spain	146.6	17.8	10,441	61	4273	2997.4	9.1	8.0	n.a.	n.a.
United Kingdom	453.2	32.6	25,000	43	1469	25,000	18.4	n.a.	22.8	n.a.
Total	7423.8	712.7	209,560	2816	51,588	83,904	-	-	-	-

Table 1 details a selection of size and market share metrics for cooperative banks. This information is for end year 2018 and concentrates upon European countries where cooperative banks originate and currently have significant market share.⁵ There are 2816 independent cooperative banks operating through 51,588 branches, with 712,700 employees and aggregate assets of €712.7 billion. Customer reach extends significantly beyond core membership (members to customers across countries averages 40%). Cooperative banks in Austria, Denmark, Finland, France, Germany, Luxembourg and the Netherlands have a sizeable share of the domestic banking market while in Finland, France, Germany and the Netherlands they are also an important source of funding for small and medium sized enterprises (SMEs).

Table 2 details information on credit unions. It is estimated that for end year 2017, there were 85,400 credit unions operating in 120 countries across six continents (World Council of Credit Unions, 2018). These credit unions had total assets of \$2191 billion and a membership of 274.2 million (population penetration of 9.38%). Africa dominates in terms of credit unions numbers (39,447; 46.2%) but they have only 13.0% of worldwide members, 0.5% of worldwide assets and a population penetration rate within Africa of 13.8%. In contrast, North America has 7% of credit union numbers, but 46.7% of worldwide members and 81.5% of total assets and a population penetration in North America of 48.88%. The credit union movement in Europe has a penetration rate of 9.16%. In Western European countries (with the exception of Ireland and Great Britain), credit unions have not emerged as a distinct group as their activities are captured by cooperative banks. While in Eastern Europe (with the exception of Lithuania, Moldova and

Poland), credit unions are in a formative stage of development.

2.2. Network arrangements

Cooperatives banks in Europe developed prominent central institutions and formed network alliances. The level of integration ranges from the centralisation of common services (such as group representation, strategic advice, and basic support services) to more executive functions (such as risk and liquidity management, management of mutual support, supervision of local banks, and mergers and acquisitions (Ayadi, Llewellyn, Schmidt, Arbak, & De Groen, 2010; Karafolas, 2016)). Finland, France and the Netherlands have highly integrated and centralised systems. Austrian and German cooperative banks have delegated fewer functions to central organisations, while Italian and Spanish counterparts are almost entirely decentralised (Bülbul et al., 2013; Fonteyne, 2007; Hackethal, 2004; Stefancic, 2010). Desrochers and Fischer (2005) provides cross-country evidence which suggests that integrated cooperative banking systems reduces both performance volatility and expense preference behaviour at financial cooperatives. The authors conclude that integrated systems are more efficient and economise on bounded rationality.⁶

Network arrangements in credit unions are most commonly characterised by the so-called atomised model. This involves relatively loose integration of member credit unions, which is generally limited to representation, lobbying and public relations (Ayadi, 2019). A notable exception is the credit union movement in Canada where Desjardins caisses populaire operate along the lines of a complex federated model. The individual caisses are independent and autonomously incorporated entities, but operate in a structured, standardised and closely interconnected environment (McMurtry & Brouard, 2015). The Desjardins federated structure provides significant economies of scale and both industry presence and profile in the marketplace (Levasseur & Rousseau, 2002). In other jurisdictions such as the US, credit unions form Credit Union Services Organisations (CUSOs) which are limited liability companies to facilitate shared services. Some CUSOs involve

⁵ Cooperative banks also established in a number of countries outside Europe. Japan's banking system comprises a large group of member-based banks consisting of credit associations (Shinkin banks), credit unions (Shinkumi banks), as well as various other mutual banks such as agricultural, fishery cooperatives and labour banks, (Glass, McKillop, Quinn, & Wilson, 2014; Uchida & Udell, 2015, 2019). In 2019, there were 256 Shinkin banks, which conduct their business through a network of 7003 branches serviced by 107,412 employees (of whom 2118 are directors). They had ¥157,064 trillion (\$1335 billion @ 1 JPY = 0.0085 USD) in total assets of which ¥70.94 trillion (\$6030 billion) were in loans. The number of Shinkumi banks has fallen steadily over recent years and at the end of 2019, there were 145 such institutions.

⁶ Rationality is bounded because there are limits to our thinking capacity, available information, and time (Simon, 1982).

Table 2
Characteristics of credit unions by country.

The table displays characteristics of credit unions in 2017 by region. The penetration rate is calculated by dividing the total number of reported credit union members by the economically active population age 15–64 years old. Data source, World Council of Credit Unions, 2018. Data is from the World Council of Credit Unions (Statistical Data, 2018).

Region (number of countries)	# credit unions	# members	Savings (US\$ mil.)	Loans (US\$ mil.)	Assets (US\$ mil.)	Reserves (US\$ mil.)	Loans/assets (%)	Reserves/assets (%)	Penetration (%)
Africa (27)	39,447	35,783,426	9596	8133	10,780	1060	75.4	9.83	13.80
Asia (27)	33,004	57,450,343	147,233	138,187	180,826	5773	76.4	3.19	4.34
Caribbean (17)	374	3,427,989	6273	4996	7662	774	65.2	10.10	65.2
Europe (17)	3491	9,103,706	24,095	11,648	32,959	4069	35.3	12.35	9.16
Latin America (17)	2891	35,807,657	59,840	54,212	90,864	17,210	59.7	18.94	14.57
North America (2)	6010	127,970,072	1,485,178	1,326,185	1,786,602	170,219	74.2	9.53	48.88
Oceania (13)	183	4,683,829	70,026	66,764	81,392	6424	82.0	7.89	3.85
Worldwide (120)	85,400	274,227,022	1,802,240	1,610,125	2191,086	205,527	73.5	9.38	9.38

cooperation among a small number of credit unions, while others involve large numbers of credit unions that enter and exit the CUSO as circumstances change. CUSOs allow credit unions to achieve economies of scale and engage in activities that individual institutions may regard as too costly or risky, or that are prohibited by regulations (Wilcox, 2005). Campbell and Dopico (2016) describe CUSOs as the best example of 'structural ambidexterity' in the credit union system.⁷

2.3. Business models

In the context of financial institutions, the business model can be viewed as how institutions "... manage their assets (activities) and liabilities (funding) over time to contribute to the financial system and the economy either by managing the risk (in their balance sheet and off-balance sheet) or by accumulating it and transferring it to the system." (Ayadi, 2019, p31). The business model of cooperative financial institutions is shaped and will continue to be shaped through technological advances (FinTech, digitalisation of products and services and online provision). At a structural level, this reduces the need for extensive bricks and mortar branch networks commonly found in the traditional banking industry but perhaps more importantly it provides alternative opportunities for service provision to members and customers. The low interest rate environment that prevailed following the global financial crisis of 2007–2009 also influences the choice of business model pursued as profits from traditional interest-generating activities have been squeezed (Claessens, Coleman, & Donnelly, 2017; Meyer, 2018). In the short run, the negative effects on profitability may be mitigated through cost cutting and the generation of more non-interest income. However, in the longer term, capitalisation issues may encourage industry consolidation as institutions merge in the pursuit of scale economies (Altavilla, Boucinha, & Peydro, 2017; Bexley & Houston, 2016). More generally, regulatory, monetary and structural reforms are factors important in driving business model change (Köhler, 2014).

Business model diversity within cooperative financial institutions has been investigated in a selection of countries. Canadian credit unions are found to operate one of three models, two are retail-oriented with different levels of diversification (focused retail and diversified retail) and one is investment-oriented which includes trading and derivatives (Ayadi, 2019). US credit unions operate one of three business model types although all are retail-oriented (Ayadi, Keoula, De Groen, Mathlouthi, & Sassi, 2017). Cooperative banks in Europe operate one of

⁷ Structural ambidexterity refers to setting up formally separate units (divisions, departments, or teams) within the organization, with some units focusing on 'exploit' tasks and others on 'explore' tasks. Each unit has separate employees, processes, and cultures. An integrated corporate leadership strategy adjusts the allocation of financial, physical, and labour resources across units over time (Campbell and Dopico, 2016, p 11).

five business models. Three of these are characterised as being retail-oriented, a fourth wholesale focused and a fifth investment driven (Ayadi et al., 2016). In Japan, Shinkin banks adopt two forms of business model, which concentrate on the issuance of loans funded by deposits (*traditional*) and the investment and management of large investment portfolios (*new*) (Chronopoulos, Sobiech, & Wilson, 2020). Business model types differ in terms of their risk appetite and profit potential with instability in business models also adversely affecting bank soundness (Ayadi, Ferri, & Pesic, 2018).

2.4. Relationship banking

Financial cooperatives, as locally based institutions, are well placed to acquire specialized local knowledge through the cultivation of relationships between bank staff and the local community. These relationships facilitate the gathering of 'soft information' that can be used to mitigate screening and monitoring costs and more readily provide credit to informationally opaque borrowers.⁸ Large complex banks are not considered to engage in relationship lending because they are at a competitive disadvantage when information about individual investment projects is innately soft (Boot & Thakor, 2000; Stein, 2002). Transactional banking, commonly associated with large complex banks, places weight on 'hard information', and is consequently more conducive to borrowers with lower informational opacity. Hard information is defined as information that can be readily quantified, objectively collected, and easily communicated.⁹

Neuberger, Pedergrana, and Oppner (2008) find localism and cooperative ownership are positively associated with the relational orientation of financial institutions (see also Uzzi, 1999). Angelini, Di Salvo, and Ferri (1998) find that lending rates in Italy tend to increase with the duration of a relationship for banks other than cooperative banks. Cooperative bank members are also found to enjoy easier access to credit relative to non-member counterparts. Holmes, Isham, Petersen, and Sommers (2007) find that low-income households with

⁸ Soft information can be defined as information that is difficult to interpret, verify, and transfer. For instance, appraisals of certain forms of collateral, such as real estate, may require expertise of individuals with specialized knowledge of local markets. Soft information can also be embedded in existing relationships, including social ones. For instance, a borrower's stature in the community and relationship with neighbours may inform the character, or social capital, of the borrower that in turn informs credit worthiness (Berger & Udell, 2002).

⁹ Bartoli, Ferri, Murro, and Rotondi (2013) note that relationship and transaction lending can complement each other and argue that transaction lending techniques should be complemented by soft information gathered in relationship lending. The authors conjecture that borrowers can manipulate hard information. Soft information gathered through relationship banking may limit the scope for such manipulation.

strong ties to a credit union are more likely to receive loans, despite poor credit histories compared to those at a community bank. Uchida, Udell, and Yamori (2012) note that in Japan more soft information is produced by loan officers at smaller (Shinkin banks and credit cooperatives) banks. However, in contrast to conventional wisdom, they do not find clear evidence that loan officers at large banks are incapable of producing soft information and potentially underwriting relationship loans. Presbitero and Zazzaro (2011) find that where relationship lending techniques are already widely used by a large number of small mutual banks (credit cooperatives and savings banks) an increase in out-of-market competition drives the mutual banks to further cultivate their relationship ties with customers.

2.5. Balancing the interest of members

There are a number of models describing how credit unions set interest rates to compensate members (Flannery, 1974; Smith, 1984; Smith, Cargill, & Meyer, 1981; Taylor, 1971a). Taylor, 1971a argues that conflict may emerge because saving members want as high a return (dividend) on savings as possible, while borrowing members want as low a loan rate as possible. Taylor (op. cit.) demonstrates that in a 'neutral credit union' (where neither the interest of savers nor borrowers dominate) total benefits to members are maximised. This 'neutrality' also creates fewer incentives for the credit union to discourage new members (of a particular orientation) joining and therefore helps to maintain the vitality of the institution. A number of papers have empirically tested whether credit unions are borrower-, saver-, or neutral-oriented. Early studies of US credit unions find a majority of credit unions are neutral in their behaviour (Flannery, 1974; Kohers & Mullis, 1986; Patin & McNeil, 1991; Smith, 1986). Some identify US credit unions on average as saver-oriented, (Leggett & Stewart, 1999) while Goddard and Wilson (2005) find younger US credit unions more likely to be borrower-oriented and older credit unions are likely to be saver-oriented. Bressan, Braga, Resende Filho, and Bressan (2013), in an analysis of Brazilian credit unions, concludes that while borrower orientation was the dominating behaviour the deviation from neutrality was marginal.

Cooperative banks, unlike credit unions, also have non-member customers, which introduces new complexities in how to balance competing stakeholder interests. Emmons and Schmid (2002) show that both the distribution of member preferences and the amount of non-member business the cooperative does influences its optimal pricing and dividend policies. Catturani and Venkatachalam (2014) demonstrate that cooperative bank interest rate settings should include a premium determined by assessing partial elasticities for each type of customer, non-member (borrowers or depositors) and member (borrowers or depositors).

A further issue in the setting of loan interest rates and saving (dividend) rates relates to the fact that cooperative financial institutions in certain countries may be subject to loan interest rate and saving rate ceilings.¹⁰ Loan interest rate ceilings can be justified as protecting borrowers by offering access to credit at fair and reasonable interest rates. However, interest rate ceilings (or ceilings set at relatively low levels) may reduce product diversification, competition between institutions and risk pricing. The latter may result in institutions choosing not to lend to some high risk borrowers many of whom will have limited access to alternative sources of credit (Ferrari, Masetti, & Ren, 2018; Maimbo & Gallegos, 2014; Miller, 2013; Safavian & Zia, 2018).

¹⁰ For example, the Irish credit union movement, the most advanced in Europe, is subject to both loan interest rate and dividend rate ceilings (Credit Union Advisory Committee, 2018)

2.6. Taxation

Not-for-profit financial cooperatives receive a tax exemption on earnings in some countries (Estonia, Ireland, Mexico, Romania and the US).¹¹ Australian credit unions were granted tax-exempt status in 1974, subsequently rescinded in 1995. Canadian credit unions have been subject to federal taxation since 1972 but at a much lower rate than other financial institutions. The discount was abolished in 2013 (Ghosh, 2018).

Proponents of the tax exemption argue that credit unions provide subsidised services to members, many of whom are of modest means. The imposition of a tax on earnings would create pressure to eliminate some of these subsidised services (Feinberg & Meade, 2017). Others argue that the preferential tax treatment compensates for the capital accumulation problem faced by credit unions (credit unions rely on retained earnings to meet their capital obligations) (Emmons & Schmid, 1999). Theoretical models used to examine the implication of taxing credit unions suggest that, as closed cooperatives, credit unions are likely to respond to an earnings tax by raising the saving (dividend) rate and reducing the loan interest rate thereby reducing accounting profits and contributions to reserves (Cook & D'Antonio, 1984; Taylor, 1971b).

As the US credit union movement is the most developed in the world, it is no surprise that here the tax exemption has come under most scrutiny. Joint Committee on Taxation (2017) estimates that the tax exemption in the US results in a \$2.9 billion annual loss of tax revenue. However, Feinberg and Meade (2017) estimate that requiring US credit unions to pay tax on earnings would result in a \$38 billion decline in tax revenues over ten years due to reduction in credit, lost jobs, and other indirect effects from a shrinking credit union sector. Recently, economists at separate Federal Reserve Banks have asked whether the credit union tax subsidy remains justified given that recent changes in the structure and regulation of US credit unions has enabled them to compete more directly with commercial banks (DiSalvo & Johnston, 2017; Marshall & Pellerin, 2017).¹² DeYoung et al. (2019) investigate whether the tax exemption passes through to members in the form of preferential saving and loan rates, or is consumed by management in the form of expense preference behaviour. The authors conclude that while some of the tax subsidy diverts away from credit union members (due to inefficiencies in non-loan investments portfolios and in the form of expense preference behaviour) most of the subsidy passes to members, with saving members benefitting most.

2.7. Regulation

Recent regulatory reform, captured by the Basel III Accord, have included revised capital and liquidity requirements, assets and activities restrictions, the introduction of supervisory stress testing arrangements and the identification and closer supervision of systemically important financial institutions.

In most European countries, cooperative banks are subject to Basel III. Some of the larger cooperative banks (in Germany, France and the Netherlands) are classified as systemically important institutions (EACB, 2018). The Basel III Accord does not apply to credit unions but some national and provincial credit union regulators have chosen to implement particular aspects of the Basel standards or have implemented regulatory changes inspired by Basel principles (WOCCU, 2012). More generally, as financial cooperatives in many countries are

¹¹ The tax-exempt status of US credit unions dates to the Revenue Act of 1916 for state-chartered credit unions and to the Federal Credit Union Act of 1934 for federally chartered credit unions (DeYoung, Goddard, McKillop, & Wilson, 2019; Tatom, 2005).

¹² Much earlier, Flannery (1974, 1981) argued that US credit unions should be taxed in the same manner as other financial organisations for reasons of competitive equality.

small and offer a limited product range, some form of proportionality is often embedded in their regulation either in the form of simplified rules, or different capital and liquidity requirements norms (Coelho, Mazzillo, Svoronos, & Yu, 2019; McKillop & Quinn, 2017). However, a trade-off often exists where adherence to simplified rules results in the imposition of higher capital and liquidity requirements (Cuevas & Buchenau, 2018; Hohl, Sison, Stastny, & Zamil, 2018).

The regulatory aspect that has come under most academic scrutiny is capital requirements. This is particularly so for credit unions which in most countries do not have the option to raise new capital in the form of equity and so are more likely to manage their capital cautiously over the course of the business cycle. Smith and Woodbury (2010) find that US credit unions are less sensitive to the business cycle than banks and should therefore be subject to lower capital requirements. Pana and Mukherjee (2010) find that higher levels of capital in US credit unions reduce their ability to create liquidity. Goddard, McKillop, and Wilson (2016) find that capital buffers for US credit unions vary pro-cyclically and until the financial crisis, credit unions classified as adequately capitalized or below followed a faster adjustment path than well-capitalized credit unions. This pattern reversed in the aftermath of the crisis. Hillier, Hodgson, Stevenson-Clarke, and Lhaopadchan (2008) find that capital adequacy regulations on Australian credit unions resulted in the use of accounting window dressing techniques to increase capital adequacy. While Australian credit unions are also found to manage their capital positions by setting a target profit rate, positively related to asset growth (Brown & Davis, 2009). Hessou and Lai (2017, 2018) find that Canadian credit union capital buffers behave counter cyclically and that they hold a capital buffer bigger than the maximum buffer advocated under Basel III. They also note that both the risk-based capital buffer and the leverage buffer are positively related to changes in loans and loan growth which underscores the importance of the Basel III conservation and the countercyclical buffer requirements in fostering credit.

3. Part two: performance and contribution to the real economy

With performance and contribution to the real economy as an overarching theme, part two of this review considers, under sub-themes, efficiency and sustainability, mergers, acquisitions and failures, the benefits (and challenges) of FinTech and the contribution of financial cooperatives to the real economy including during times of crisis.

3.1. Performance (efficiency, profitability and risk)

In North America, evidence for credit unions suggest the prevalence of economies of scale. Goddard, McKillop, and Wilson (2002) suggest that larger US credit unions grew faster than their smaller counterparts throughout the 1990s, suggesting advantages accruing to size. Wheelock and Wilson (2011) present evidence to suggest that economies of scale are available to credit unions operating across the entire size distribution. Studies for Australia (Brown & O' Connor, 1995; Esho, 2000); Canada (Kim, 1986; Murray & White, 1983); Japan (Glass, McKillop, Quinn, & Wilson, 2014); Ireland (Glass, McKillop, & Quinn, 2014); New Zealand (Sibbald & McAlevey, 2003) and the UK (McKillop, Ferguson, & Nesbitt, 1995) also find evidence of increasing returns to scale.

A segment of the literature has conducted comparative analyses of efficiency across cooperatives, commercial banks and savings banks. For example, Altunbas, Evans, and Molyneux (2001) find that savings and cooperative banks in Germany are more profit and cost efficient than commercial banks. Giradone, Nankervis, and Velentza (2009) find that cooperative and savings banks operating in EU-15 countries are more cost efficient than their commercial banking counterparts. Mäkinen and Jones (2015) find that in Europe cooperative banks are more efficient (less inefficient) than savings and commercial banks. For

the US, Frame, Karels, and McClatchey (2003) compare the financial performance of US credit unions and US mutual thrift institutions. They find that credit unions incur higher costs than mutual thrifts.

A number of empirical studies have attempted to establish a systematic relationship between ownership form and profitability. For example, Goddard, Molyneux, and Wilson (2004) find little evidence that ownership type matters in explaining profitability differences across banks in Denmark, France, Germany, Italy, Spain and the UK. In a cross-country study, Fernández, Fonseca, and González (2004) find that public and mutual banks had higher interest margins but also higher non-interest expenses than shareholder-owned banks. Iannotta, Nocera, and Sironi (2007) examine the relationship between ownership form and the performance and risk of a sample of large banks from 15 European countries. In spite of their lower cost base, cooperative and savings banks exhibit lower profitability than shareholder-owned banks. Goddard, Liu, Molyneux, and Wilson (2013) find savings banks were more profitable than commercial banks in Germany, the Netherlands, Spain and the UK. Cooperative banks were more profitable than commercial banks in Germany, Italy, the Netherlands and Spain.

Financial cooperatives have different risk-taking incentives to commercial banks since they pursue social and economic development objectives rather than shareholder value maximization. Given a stable deposit base and business strategies that aim to build up capital for future generations, financial cooperatives may be less fragile than commercial banks.¹³ However, financial cooperatives are less diversified and have less option to raise capital at short notice. Consequently, financial cooperatives are less able to absorb demand-or supply-side shocks to their balance sheets (Fonteyne, 2007).

Results from extant empirical studies appear to suggest that savings banks and financial cooperatives are less risky than commercial banks. For example, Iannotta et al. (2007) in a study of banks across Europe find that mutual banks have better loan quality and lower asset risk than shareholder-owned banks. Using a large sample of commercial, savings and cooperative banks from 29 OECD countries, Hesse and Cihak (2007) find that while cooperative banks are less profitable and capitalized than commercial banks, they enjoy more stable returns. Chiaramonte, Poli, and Oriani (2015) find that European cooperative banks are more stable than commercial banks during stressed periods. The opposite appears to be true under normal economic conditions. Liu and Wilson (2013) find that when exposed to increasing competition Japanese financial cooperatives become riskier than commercial banks. In the US, Goddard, McKillop, and Wilson (2008) present evidence that revenue diversification does not reduce risk or enhance the performance of credit unions. Ely (2014) finds that credit unions with broader field-of-membership are less well capitalized and exhibit greater earnings volatility. For Australia, Esho, Kofman, and Sharpe (2005) find that the increased reliance on fee-income generating activities is associated with increased risk.

3.2. Mergers, acquisitions and failures

Analysis of credit union mergers have concentrated on the US (Bauer, 2010; Bauer, Miles, & Nishikawa, 2009; Fried, Schmidt, & Yaisawarng, 1999; Goddard, McKillop, & Wilson, 2009; Goddard, McKillop, & Wilson, 2014; Wilcox & Dopico, 2011); Australia (Ralston, Wright, & Garden, 2001; Worthington, 2004); New Zealand (McAlevey, Sibbald, & Tripe, 2010) and the UK (Goth et al., 2006). The majority of these studies conclude that members of target credit unions experience an immediate improvement in product cost, service provision and financial stability after the merger. However, limited evidence is found of enhanced benefits accruing to members of the acquiring credit union

¹³ Becchetti, Ciciretti, and Paolantonio (2016) provide a detailed comparative cross country analysis of balance sheet characteristics of cooperative and commercial banks before and after the global financial crisis.

unless the credit union had prior experience of mergers. ‘Learning-by-doing’ spreads the overhead cost of successive mergers, and minimizes the loss of focus on managements’ primary objective of serving members.¹⁴ Ralston et al. (2001) suggest that mergers do not generate efficiency gains greater than those that non-merging credit unions are able to achieve through internal growth. McAlevey et al. (2010) conclude that a major driver of mergers is not the usual reason of attempting to increase efficiency but rather enforced government action. Goth et al. (2006) argue that mergers may have negative consequences for the healthier of the two merging entities including a dilution in membership focus, increasing loan arrears, and reduced dividends.

Wilcox (2005) suggests that younger, smaller, and less well-capitalized credit unions are more likely to fail. Negative macroeconomic conditions are a likely contributory factor to failure. Smith and Woodbury (2010) find that credit unions are less exposed than banks to fluctuations in the business cycle. Goddard et al. (2014) find that smaller credit unions, those with a high proportion of assets in liquid form, those with low loans-to-assets ratios and those that are highly capitalized are at greater risk of failure. Pille and Paradi (2002) develop a failure prediction model to detect weaknesses in credit unions in Canada (Ontario). They find that the equity/asset ratio is a good predictor of failure and is not improved upon by more complex Z-score and Data Envelopment Analysis (DEA) models.

Analysis of cooperative bank mergers has focused primarily on Europe. Lang and Welzel (1999) considers mergers in German (Bavarian) cooperative banks and concludes that the primary motive is not the improvement of operational efficiency but rather regulatory pressure. Koetter (2008) considers savings and cooperative bank mergers in Germany and concludes that only one in two mergers prove a success. Coccocorese, Ferri, and Spiniello (2017) find that mergers in Italian cooperative banks improve cost efficiency in only 5% of cases. Jones and Kalmi (2012) suggest that network arrangements confer on European cooperative banks many efficiency advantages that may be gained by way of merger and acquisitions. Harada and Kitamura (2016) investigate consolidation in Japanese cooperative banks (Shinkin banks). They conclude that much of the activity is driven by the regulatory authority’s desire for banking stability. They find that large, but unhealthy and inefficient banks merge with small and inefficient banks in order to survive and benefit from a subsidised deposit rate.

Maggiolini and Mistrulli (2005) analyse a sample of recently established cooperative banks in Italy and conclude that the probability of failure is negatively related to the market share of incumbent banks and the absence of other mutual banks. Libertucci and Piersante (2012) find that the capital adequacy of cooperative banks is related to both the time to default and the likelihood of default. Fiordelisi and Mare (2014) find that the state of the economy affects the survival of cooperative banks. Iyer and Puri (2012) analyse the impact that a failure of a cooperative bank in India has on other cooperative banks in the same state. The authors find that the failure triggered runs across other cooperative banks in the same state. Deposit insurance only partially mitigated the runs. More important in the mitigation of runs were bank-depositor relationships and social networks.

3.3. FinTech

FinTech, refers to the interplay between finance and technology. Financial Stability Board (FSB) (2017) describes FinTech as ‘*technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.*’

¹⁴ DeLong and DeYoung (2007) advanced the “learning by observing” hypothesis which argues that bank mergers in the mid or late 1990s would have been more likely to create value than the mergers in the 1980s because bank managements would have benefited from observing prior mergers.

While the interaction between finance and technology has a long history, the current FinTech phase (dating from 2008) has increasingly become defined by who delivers products and services rather than the products and services being delivered (Arner, Barberis, & Buckley, 2017). This latest phase is about the use of technology by new entrants to provide non-intermediated financial services directly to customers (Consumers International, 2017). The largest number of these new FinTech providers are in the payments, clearing and settlement sectors (mobile wallets, peer to peer transfers and digital currencies) followed by credit, deposit and capital-raising services (crowdfunding, lending marketplaces, credit scoring, mobile banks) (Bank for International Settlements, 2018; Frame, Wall, & White, 2019; Frost, Gambacorta, Huang, Shin, & Zbinden, 2019; Stulz, 2019; Thakor, 2020).¹⁵

There are a number of implications of FinTech for cooperative financial institutions. First, several FinTech companies have now succeeded in successfully scaling a relationship banking technology which going forward may erode the relationship and soft information capture advantage of small scale localized financial cooperatives (Jaksic & Marinc, 2018; Lin, Prabhala, & Viswanathan, 2013). There is evidence in the US that ‘Peer 2 Peer’ lending activities have penetrated areas that are underserved by traditional banks (assets greater than \$50bn) such as in highly concentrated markets and areas that have fewer bank branches per capita (Jagtiani & Lemieux, 2018). Secondly, many large commercial banks have taken a more active role in fostering technological improvements in transactional lending. A number of FinTech lenders have partnered with large banks to offer white label products.¹⁶ In some cases, FinTech lenders have been acquired by or have sold equity stakes to these banks.¹⁷ Partnerships between FinTech firms and small banks are less common due to the regulatory costs associated with them. However, there is evidence that by using FinTech solutions to process customer and application data some community banks have been able to restore profitability to some forms of consumer and small business lending after several decades of thinning and/or negative operating margins (Eckblad, James, & Oppenheimer, 2017; Kim & McKillop, 2019).

3.4. Lending and the real economy

In many countries, financial cooperatives via their role in mobilising savings and extending credit play a key role in fostering social capital and local economic development especially given their overriding mission to maximise the welfare of stakeholders that are located in the local community (Lang, Signore, & Gvetadze, 2016).¹⁸ Hasan, Jackowicz, Kowalewski, and Kozłowski (2014) find that local cooperative banks in Poland lend more to small businesses than large domestic and foreign-owned banks. Ferri, Kalmi, and Kerola (2014, 2015) analyse differences in lending policies across stakeholder and shareholder EU banks to detect possible variations in bank lending supply responses to changes in monetary policy. Following a monetary policy contraction, stakeholder banks decrease loan supply to a lesser extent than shareholder banks. A detailed analysis of the effect among stakeholder banks reveals that cooperative banks continued to smooth the impact of tighter monetary policy on their lending during the crisis period (2008–2011) whereas savings banks did not.¹⁹

¹⁵ There are approximately 12,000 specialized FinTech firms (Thakor, 2020).

¹⁶ Institutions sell white label products with their own branding, but a third party manufactures the products.

¹⁷ Since 2012, large banks have invested at least \$4.1 billion in FinTech firms.

¹⁸ Jones and Kalmi (2009), Ostergaard, Schindele, and Vale (2015) and Chronopoulos, Lukas, and Wilson (2020) provide extensive discussions of the inter-relationships between social capital and financial mutual and cooperatives.

¹⁹ Berger, Molyneux, & Wilson, 2020 provide an extensive discussion of recent research evidence on the role of banks in the real economy. Athey and

Meriläinen (2016) finds that both the financial crisis and the sovereign debt crisis caused a negative shock in Western European lending growth. The shock was weakened by stakeholder banks whose lending growth either did not decrease during the two crises or decreased substantially less than that of commercial banks. Migliorelli (2018) notes that cooperative banks lent proportionately more than other banks in Germany and other European countries during the financial crisis. This was not the case for countries in Southern Europe. Ely and Robinson (2009) find that credit unions expand their small business lending activities in geographic areas significantly affected by bank consolidation. Smith and Woodbury (2010) and Smith (2012) suggest that credit unions are better equipped to withstand macroeconomic shocks to their balance sheets. They also find that while banks contract commercial lending during periods of economic stress the opposite is true for credit unions. Ramcharan, Verani, and Van Den Heuvel (2016) do, however, note that US credit unions most exposed to the failure of large corporate credit unions (because of declining investment values) reduced real estate and consumer lending during the great financial crisis.

Evidence suggests that financial cooperatives play an important role in the welfare of households and the economy more generally. Sfar and Ben Ouda (2016) present evidence that suggests that cooperative banks contribute to regional economic growth in France. Usai and Vannini (2005) suggest that (in contrast to larger commercial banks) cooperative banks play an important role in promoting regional economic development in Italy while Minetti, Murro, and Peruzzi (2019) show that cooperative banks play an important role in reducing income inequalities in local Italian provinces.

3.5. The great recession

Evidence presented in the previous section suggests that following financial shocks, financial cooperatives decrease credit supply to a lesser extent than shareholder banks.²⁰ The Great Recession has highlighted further differences between financial cooperatives and commercial banks.

Chatterji, Luo, and Seamans (2015) find that US credit unions on average gained market share from banks following the financial crisis. These gains primarily accrued to credit unions that embody traditional identities (such as philanthropic giving) distinct from traditional banks. Smith and Rothbaum (2013) note that financial cooperatives in the US, Canada, the Netherlands, the UK, and Taiwan have increased their deposits and loan portfolios in the midst of the global financial crisis. Stefancic (2016) find that Italian cooperative banks performed better than other Italian banks during the financial crisis. The quality of loans deteriorated less in these banks than in others while no significant differences were observed in terms of return on average assets and cost efficiency. Henselmann, Ditter, and Lupp (2016) find that cooperative banks (compared to commercial banks and savings banks) were the most stable during the years surrounding the financial crisis. Walker (2016) shows that credit unions have increased their business lending as a substitute for other lending during the crisis. Rauterkus, Ramamonjirivelo, and Munchus (2018) demonstrate that credit union deposits increase in times of economic uncertainty suggesting that they are perceived as a safe haven during an economic crisis. Although, it is also observed that credit union members act as a disciplining mechanism by withdrawing deposits from credit unions engaged in overly

(footnote continued)

Imbens (2017) provide an overview and guide to instrumental variables (IV), difference-in-difference (DID) estimators, and regression discontinuity research designs which are used in many of the aforementioned studies.

²⁰ European cooperative banks are found to be, on average, less profitable in 'normal' periods but also more stable due to higher solvency ratios (Gutierrez, 2008; Hesse & Cihak, 2007).

risky lending activities (Gomez-Biscarri, López-Espinosa, & Mesa Toro, 2019). Less positively, Maskara and Neymotin (2019) find that during the financial crisis, credit unions were no more likely than other depository institutions to extend a home equity line of credit either in areas experiencing housing price declines or to lower income households. They suggest that these findings provide an empirical counterpoint to those who have lauded credit unions for providing liquidity during times of crisis or for serving consumers who would otherwise be challenged to obtain funds.

4. Conclusion

The scope of this paper is vast but is by no means an exhaustive review of literature on financial cooperatives. Financial cooperatives play an important role in the financial systems of many countries around the world. They act as a safe haven for deposits and are major sources of credit for households and small- and medium-sized firms. A not-for-profit orientation (in many cases) and a focus on maximising benefits to members has ensured the enduring popularity and sustainability of financial cooperatives. This is particularly evident since the global financial crisis when in many cases, financial cooperatives continued to extend credit to members as many profit-orientated commercial banks restricted credit to households and firms.

The review has recognised the enduring nature of financial cooperatives from origin in Germany in the 19th Century to today where they have a presence in over 140 countries.²¹ It has identified the power of cooperation, in the form of network arrangements, in the attainment of their common goals. It has highlighted the importance of relationship lending as a feature of business model development although questions whether this comparative advantage can maintain in the face of disruption from FinTech companies. The review has confirmed the complexities involved in balancing competing stakeholder interests but confirms that financial cooperatives achieve this balance better than most other organisational forms. Whether mergers generate scale and scope economies and whether members/customers benefit post-merger have been the subject of many papers. Consensus opinion is that scale economies do accrue however, member/customer benefits are transitory.

The review also considered research areas in their infancy now requiring further investigation. Research on business models has concentrated on the identification of clusters based on product mix and funding source differences. Next steps in this research should be to develop and advance a more nuanced understanding of business models in terms of product and process innovation, finding and reaching customers and the design of new products for as yet unmet needs.

Research on FinTech demonstrated that FinTech solutions has restored profitability to some forms of consumer and small business lending after several decades of thinning and/or negative operating margins. However, the popularity of FinTech has caused disruption in financial services. Members/customers no longer feel tied to their traditional service providers. Instead, they prefer services that are quick, safe and offered remotely. Now is the time to connect practitioner-led and academic research to aid understanding of the challenges posed and opportunities offered by FinTech for both financial cooperatives and their regulatory bodies.

Recent research discussed (elsewhere) suggests that (as a consequence of informational asymmetries, limited collateral and a high proportion of intangible assets that are difficult to value) entrepreneurs can only start new businesses if they were born rich or accumulated capital over time (Brown, Cookson, & Heimer, 2019). Moreover, banking industry consolidation has led to a significant decline in locally based banks specialising in lending to small businesses. As banks have become in some cases less willing to extend credit to local

²¹ There are 195 countries in the world.

entrepreneurs, financial cooperatives have started to expand their services to fill this gap. Future research could usefully explore the impact of financial cooperatives on access to finance and subsequent entrepreneurship, innovation and economic growth.²²

The relevance and importance of financial institutions is illustrated only too aptly during crisis periods where households and firms often lack liquidity. During the financial crisis (and more generally during downward swings in the business cycle), evidence suggests that financial cooperatives play a crucial role in assuring the flow of credit to households (Ramcharan et al., 2016). At the time of writing the world economy is experiencing an unprecedented negative shock arising from the onset of the COVID-19 crisis. This crisis is having a significant and varied impact on businesses and households (Altig et al., 2020; Baker, Farrokhnia, Meyer, Pagel, & Yannelis, 2020; Chronopoulos, Lukas, & Wilson, 2020). Further research is urgently required to understand likely impacts of this crisis on financial cooperatives, and the role that these institutions can play in smoothing lending and liquidity to households and small firms.

Credit author statement

Donal McKillop and John Wilson were responsible for the conceptualization of the research and formulating the structure of the paper. Discussions with the other authors helped inform the topic area to be assessed in this review of the literature. Donal McKillop and John Wilson also undertook much of the formal analysis and the drafting of an initial paper.

Anna Sobiech contributed detailed insight to discussion around the section pertaining to business models and contributed to a number of revisions of the initial draft of the paper.

Barry Quinn and Declan French provided a detailed review of the original draft and contributed significantly to the construction of subsequent drafts and the final paper.

References

- Altavilla, C., Boucinha, M., & Peydro, J. L. (2017). *Monetary policy and bank profitability in a low interest rate environment*. ECB Working Paper. (Number 2105).
- Altig, D., Barrero, J. M., Bloom, N., Davis, S. J., Meyer, B., Mihaylov, E., & Parker, N. (2020). *American firms foresee a huge negative impact of the coronavirus*. Federal Reserve Bank of Atlanta Technical Report. (March).
- Altunbas, Y., Evans, L., & Molyneux, P. (2001). Bank ownership and efficiency. *Journal of Money, Credit and Banking*, 33, 926–954.
- Angelini, P., Di Salvo, R., & Ferri, G. (1998). Availability and cost of credit for small businesses: Customer relationships and credit cooperatives. *Journal of Banking & Finance*, 22, 925–954.
- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech, RegTech, and the reconceptualization of financial regulation. *Northwestern Journal of International Business and Law*, 37, 371–413.
- Aschhoff, G. (1982). The banking principles of Hermann Schulze-Delitzsch and Friedrich Wilhelm Raiffeisen. In W. Engels, & H. Pohl (Eds.). *German yearbook on business history*. Berlin, Heidelberg: Springer.
- Athey, S., & Imbens, G. (2017). The state of applied econometrics: Causality and policy evaluation. *Journal of Economic Perspectives*, 31, 3–32.
- Ayadi, R. (2019). *Banking business models: Definition, analytical framework and financial stability assessment*. Basingstoke: Palgrave Macmillan.
- Ayadi, R., Ferri, G., & Pesic, V. (2018). *Does business model instability imperil Banks' soundness: Evidence from Europe Bancaria*. 7–8.
- Ayadi, R., Keoula, M., De Groen, W. P., Mathlouthi, W., & Sassi, I. (2017). *Bank and credit unions business models in the United States*. Montreal: International Research Centre on Cooperative Finance.
- Ayadi, R., Llewellyn, D. T., Schmidt, R. H., Arbak, E., & De Groen, W. P. (2010). *Investigating diversity in the banking sector in Europe: Key developments, performance and role of cooperative banks*. Brussels: CEPS.
- Ayadi, R., et al. (2016). *Banking business models monitor 2015*. Europe. Montreal: International Research Centre on Cooperative Finance.
- Baker, S. R., Farrokhnia, R. A., Meyer, S., Pagel, M., & Yannelis, C. (2020). *How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic*. National Bureau of Economic Research Working Paper, number 26949.
- Bank for International Settlements (2018). *Sound practices: Implications of Fintech Developments for banks and bank supervisors*. Basel Committee on Banking Supervision.
- Bartoli, F., Ferri, G., Murro, P., & Rotondi, Z. (2013). SME financing and the choice of lending Technology in Italy: Complementarity or substitutability? *Journal of Banking & Finance*, 37, 5476–5485.
- Bauer, K. (2010). *Can credit union performance improve through mergers? The case of state farm credit union consolidation*. Mimeo.
- Bauer, K., Miles, L., & Nishikawa, T. (2009). The effect of mergers on credit union performance. *Journal of Banking & Finance*, 33, 2267–2274.
- Becchetti, L., Ciciretti, R., & Paolantonio, A. (2016). The cooperative bank difference before and after the global financial crisis. *Journal of International Money and Finance*, 69, 224–246.
- Berger, A. N., Molyneux, P., & Wilson, J. O. S. (2020). Banks and the real economy: An overview of the research. *Journal of Corporate Finance*, 62(June)<https://doi.org/10.1016/j.jcorpfin.2019.101513>.
- Berger, A. N., & Udell, G. F. (2002). Small business credit availability and relationship lending: The importance of Bank organizational structure. *Economic Journal*, 112, F32–F53.
- Bexley, J. B., & Houston, S. (2016). How mergers are changing banking landscape. *Academy of Strategic Management Journal*, 15, 1–8.
- Birchall, J. (2013a). *Resilience in a downturn: The power of financial cooperatives*. Geneva: International Labour Organisation.
- Birchall, J. (2013b). *Finance in an age of austerity: The power of customer-owned banks*. Cheltenham: Edward Elgar Publishing.
- Boot, A. W. A., & Thakor, A. V. (2000). Can relationship banking survive competition? *Journal of Finance*, 55, 679–713.
- Bressan, V. G. F., Braga, M. J., Resende Filho, M., & Bressan, A. A. (2013). Brazilian credit union member groups: Borrower-dominated, saver-dominated or neutral behavior? *Brazilian Administration Review*, 10, 40–56.
- Brown, C., & Davis, K. (2009). Capital management in mutual financial institutions. *Journal of Banking & Finance*, 33, 443–445.
- Brown, J. R., Cookson, J. A., & Heimer, R. Z. (2019). Growing up without finance. *Journal of Financial Economics*, 134, 591–616.
- Brown, R., & O' Connor, I. (1995). The measurement of economies of scale in Victorian credit unions. *Australian Journal of Management*, 20, 1–24.
- Bülbül, D., Schmidt, R. H., & Schüwer, U. (2013). *Savings banks and cooperative banks in Europe*. SAFE Policy White Papers, number 5.
- Campbell, D., & Dopic, L. G. (2016). *Structures for innovation*. Madison: Filene Research Institute.
- Catturani, I., & Venkatachalam, R. (2014). Optimal interest rates in cooperative banks with non-member customers. *Journal of Entrepreneurial and Organisational Diversity*, 3, 181–199.
- Chatterji, A., Luo, J., & Seamans, R. (2015). Banks versus credit unions after the financial crisis. *Academy of Management Proceedings*, 15.
- Chiaromonte, L., Poli, F., & Oriani, M. (2015). Are cooperative banks a lever for promoting Bank stability? Evidence from the recent financial crisis in OECD countries. *European Financial Management*, 21, 491–523.
- Chronopoulos, D., Lukas, M., & Wilson, J. O. S. (2020). *Consumer spending responses to the COVID-19 pandemic: An assessment of Great Britain*. Centre for Responsible Banking & Finance Working Paper, number 20–12.
- Chronopoulos, D., Sobiech, A. L., & Wilson, J. O. S. (2020). *Social capital and the business models of financial cooperatives: Evidence from Japanese Shinkin Banks*. Centre for Responsible Banking & Finance Working Paper number. 200–204.
- Claessens, S., Coleman, N., & Donnelly, M. (2017). Low-for-long interest rates and banks' interest margins and profitability: Cross-country evidence. Federal Reserve International Finance Discussion Paper. Number 1197.
- Coccorese, P., Ferri, G., & Spiniello, F. (2017). *Are mergers among cooperative banks worth a dime? Evidence on post-M&A efficiency in Italy*. CERBE Working Paper, number 18.
- Coelho, R., Mazzillo, J. A., Svoronos, J. P., & Yu, T. (2019). *Regulation and supervision of financial cooperatives*. Financial Stability Institute Insights on Policy Implementation number 15.
- Colvin, C., & McLaughlin, E. (2014). Raiffeisenism abroad: Why did German cooperative banking fail in Ireland but prosper in the Netherlands? *Economic History Review*, 67, 492–516.
- Consumers International (2017). *Banking on the future: An exploration of Fintech and the consumer interest*, monograph, consumers international: Coming together for change. (July 2017).
- Cook, T., & D'Antonio, L. (1984). Credit union taxation: Competitive effects. *Journal of Economics & Business*, 36, 251–262.
- Credit Union Advisory Committee (2018). *Policy paper: Loan interest rate cap*. <https://www.gov.ie/en/publication/98a785-loan-rate-interest-cap/>.
- Cuevas, C. E., & Buchenau, J. (2018). *Financial cooperatives: Issues in regulation, supervision and institutional strengthening*. Washington, DC: World Bank.
- Cuevas, C. E., & Fischer, K. P. (2006). *Cooperative financial institutions: Issues in governance, regulation, and supervision*, World Bank Working Paper number 82.
- DeLong, G., & DeYoung, R. (2007). Learning by observing: Information spillovers in the execution and valuation of commercial bank M&As. *Journal of Finance LXII*, 181–216.
- Desrochers, M., & Fischer, K. P. (2005). The power of networks: Integration and financial cooperative performance. *Annals of Public and Cooperative Economics*, 76, 307–354.
- DeYoung, R., Goddard, J., McKillop, D. G., & Wilson, J. O. S. (2019). *Who consumes the credit union tax subsidy? QMS research paper 2019/08*.
- DiSalvo, J., & Johnston, R. (2017). Credit Unions' expanding footprint, Federal Reserve Bank of Philadelphia Banking Trends. *First Quarter*, 17–25.
- Eckblad, M., James, J., & Oppenheimer, A. (2017). *Addressing FinTech's alternative lending*

²² We acknowledge that a parallel stream of research on microfinance institutions has provided valuable insights to the role these organisations play in tackling financial education and fostering entrepreneurship. Lensink and Bulte (2019) provide an overview of this literature.

- models. *Chicago Fed Letter*, number 383.
- Ely, D. (2014). Credit unions and risk. *Journal of Regulatory Economics*, 46, 80–111.
- Ely, D., & Robinson, K. J. (2009). Credit unions and small business lending. *Journal of Financial Services Research*, 35, 53–80.
- Emmons, W. R., & Schmid, F. A. (2002). Pricing and dividend policies in open credit cooperatives. *Journal of Institutional and Theoretical Economics*, 158, 234–255.
- Emmons, W. R., & Schmid, F. A. (1999). *Credit unions and the common bond*. Federal Reserve Bank of St Louis 41–64 Sept/Oct.
- Esho, N. (2000). Scale economies in credit unions: Accounting for subsidies is important. *Journal of Financial Services Research*, 18, 29–43.
- Esho, N., Kofman, P., & Sharpe, I. G. (2005). Diversification, fee income and credit union risk. *Journal of Financial Services Research*, 27, 259–281.
- European Association of Co-operative Banks (2018). Key figures. <http://www.eacb.coop/en/cooperative-banks/key-figures.html>.
- Feinberg, R., & Meade, D. (2017). *Economic benefits of the credit union tax exemption to consumers, businesses, and the U.S. economy*. National Association of Federally-Insured Credit Unions.
- Fernández, A. I., Fonseca, A. R., & González, F. (2004). The effect of government ownership on bank profitability and risk. In R. Roll (Ed.). *Focus on financial institutions and services*. New York: Nova Science, Publishers.
- Ferrari, A., Masetti, O., & Ren, J. (2018). *Interest rate caps: The theory and the practice*, *World Bank Policy Research Paper*, number, 8398.
- Ferri, G., Kalmi, P., & Kerola, E. (2014). Does Bank ownership affect lending behavior? Evidence from the euro area. *Journal of Banking & Finance*, 48, 194–209.
- Ferri, G., Kalmi, P., & Kerola, E. (2015). Organizational structure and performance in European banks: A post-crisis re-assessment. *Advances in the economic analysis of participatory and labor-managed firms*. Vol. 16. *Advances in the economic analysis of participatory and labor-managed firms* (pp. 109–141).
- Financial Stability Board (2017). *Supervisory and regulatory issues raised by FinTech that merit authorities' attention*. Basel: Financial Stability Board.
- Fiordelisi, F., & Mare, D. S. (2014). Competition and financial stability in European cooperative banks. *Journal of International Money and Finance*, 45, 1–16.
- Flannery, M. J. (1974). *An economic evaluation of credit unions in the United States*. *Federal Reserve Bank of Boston, Research Report number 54*.
- Flannery, M. J. (1981). Discussant on: Credit unions: An economic theory of a credit union, by Smith D. J., Cargill T. F. and Meyer R. a. *Journal of Finance*, 36, 554–556.
- Fonteyne, W. (2007). *Cooperative banks in Europe: Policy issues*, *IMF Working Paper*, number WP/07/159.
- Fonteyne, W., & Hardy, D. (2011). Cooperative banking and ethics: Past, present and future. *Ethical Perspectives*, 18, 491–514.
- Frame, W. S., Karels, G. V., & McClatchey, C. A. (2003). Do credit unions use their tax advantage to benefit members? Evidence from a cost function. *Review of Financial Economics*, 12, 35–47.
- Frame, W. S., Wall, L., & White, L. J. (2019). Technological change and financial innovation in banking: Some implications for FinTech. In A. Berger, P. Molyneux, & J. O. S. Wilson (Eds.). *Oxford handbook of banking*(3rd ed.). Oxford: Oxford University Press.
- Fried, H. O., Schmidt, S. S., & Yaisawarng, S. (1999). The impact of mergers on credit union service provision. *Journal of Banking & Finance*, 23, 367–386.
- Frost, J., Gambacorta, L., Huang, Y., Shin, H., & Zbinden, P. (2019). *BigTech and the changing structure of financial intermediation*, *Bank of International Settlements Working Paper Number 779*.
- Ghosh, P. (2018). *How other nations treat credit unions' tax status*. Credit Union Journal (April 2018).
- Giradone, C., Nankervis, J. C., & Velentza, E. F. (2009). Efficiency, ownership and financial structure in European banking: A cross-country comparison. *Managerial Finance*, 35, 227–245.
- Glass, C., McKillop, D. G., & Quinn, B. (2014). Modelling the performance of Irish credit unions, 2002 to 2010. *Financial Accountability and Management*, 30, 430–453.
- Glass, C., McKillop, D. G., Quinn, B., & Wilson, J. O. S. (2014). Co-operative bank efficiency in Japan: A parametric distance function analysis. *European Journal of Finance*, 20, 291–317.
- Goddard, J., Liu, H., Molyneux, P., & Wilson, J. O. S. (2013). Do bank profits converge? *European Financial Management*, 19, 345–365.
- Goddard, J., McKillop, D. G., & Wilson, J. O. S. (2002). The growth of US credit unions. *Journal of Banking & Finance*, 22, 2327–2356.
- Goddard, J., McKillop, D. G., & Wilson, J. O. S. (2008). The diversification and financial performance of US credit unions. *Journal of Banking & Finance*, 32, 1836–1849.
- Goddard, J., McKillop, D. G., & Wilson, J. O. S. (2009). Consolidation in the US credit union sector: Determinants of the hazard of acquisition. *Journal of Financial Services Research*, 36, 231–252.
- Goddard, J., McKillop, D. G., & Wilson, J. O. S. (2014). US credit unions: Survival, consolidation and growth. *Economic Inquiry*, 52, 304–319.
- Goddard, J., McKillop, D. G., & Wilson, J. O. S. (2016). Regulatory change and capital adjustment of US credit unions. *Journal of Financial Services Research*, 50, 29–55.
- Goddard, J., Molyneux, P., & Wilson, J. O. S. (2004). The profitability of European banks: A cross-sectional and dynamic panel analysis. *Manchester School*, 72, 363–381.
- Goddard, J., & Wilson, J. O. S. (2005). US credit unions: An empirical investigation of size, age and growth. *Annals of Public and Cooperative Economics*, 76, 375–406.
- Gomez-Biscarri, J., López-Espinosa, G., & Mesa Toro, A. (2019). *Cobbler, stick to thy last: The disciplining of business loans in credit unions*. *Centre for Responsible Banking & Finance, University of St Andrews, Working Paper*, 19–008.
- Gorton, G., & Schmid, F. (1999). Corporate governance, ownership dispersion and efficiency: Empirical evidence from Austrian cooperative banking. *Journal of Corporate Finance*, 5(2), 119–140.
- Goth, P., McKillop, D. G., & Ferguson, C. (2006). *Building better credit unions*. York: Joseph Rowntree Foundation.
- Guinnane, T. W. (2001). Cooperatives as information machines: German rural credit cooperatives, 1883–1914. *Journal of Economic History*, 61, 366–389.
- Guinnane, T. W. (2002). Delegated monitors, large and small: Germany's banking system, 1800–1914. *Journal of Economic Literature*, XL, 73–124.
- Guinnane, T. W., & Henriksen, I. (1998). Why Danish credit co-operatives were so unimportant. *Scandinavian Economic History Review*, 46, 32–54.
- Gutierrez, E. (2008). *The reform of Italian cooperative banks: Discussion of proposals*. *IMF Working Paper*, number 08/74.
- Hackethal, D. C. (2004). German banks and banking structure. In J. P. Krahen, & R. H. Schmidt (Eds.). *The German financial system* (pp. 71–105). Oxford: Oxford University Press.
- Harada, K., & Kitamura, K. (2016). *Pre- and post-merger performances of Shinkin Banks in Japan*, *TCER Working Paper series*. J–14.
- Hasan, I., Jackowicz, K., Kowalewski, O., & Kozłowski, L. (2014). *Bank ownership, SME lending and local credit markets*, *Bank of Finland Discussion Paper*, number 22.
- Henselmann, K., Ditter, D., & Lupp, P. (2016). *The effects of the financial crisis on co-operative banks in Europe: A critical comparison*, *Working Papers in Accounting Valuation Auditing*, number 2016–1.
- Hesse, H., & Gihak, M. (2007). *Cooperative banks and financial stability*. *IMF Working Paper*, number 07/2.
- Hessou, H., & Lai, V. S. (2017). Basel III capital buffer requirements and credit union prudential regulation: Canadian evidence. *Journal of Financial Stability*, 30, 92–110.
- Hessou, H., & Lai, V. S. (2018). Basel III capital buffers and Canadian credit union lending: Impact of the credit cycle and the business cycle. *International Review of Financial Analysis*, 57, 23–39.
- Hillier, D., Hodgson, A., Stevenson-Clarke, P., & Lhaopadchan, S. (2008). Accounting window dressing and template regulation: A case study of the Australian credit union industry. *Journal of Business Ethics*, 83, 579–593.
- Hohl, S., Sison, M., Stastny, T., & Zamil, R. (2018). *The Basel framework in 100 jurisdictions: Implementation status and proportionality aspects*, *Financial Stability Institute Insights on Policy Implementation*, number 11.
- Holmes, J., Isham, J., Petersen, R., & Sommers, P. M. (2007). Does relationship lending still matter in the consumer banking sector? Evidence from the automobile loan market. *Social Science Quarterly*, 88, 585–597.
- Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking & Finance*, 31, 2127–2149.
- Isbister, J. (1994). *Thin cats: The community development credit union movement in the United States*. California: Center for Cooperatives, University of California.
- Iyer, R., & Puri, M. (2012). Understanding Bank runs: The importance of depositor-bank relationships and networks. *American Economic Review*, 102, 1414–1445.
- Jagtiani, J., & Lemieux, C. (2018). Do FinTech lenders penetrate areas that are underserved by traditional banks? *Journal of Economics & Business*, 100, 43–54.
- Jaksic, M., & Marinc, M. (2018). Relationship banking and information technology: The role of artificial intelligence and fintech. *Risk Management*, 21, 1–18.
- Joint Committee on Taxation (2017). *Estimates of federal tax expenditures for fiscal years 2012–2017*. <https://www.jct.gov/publications.html?func=startdown&id=4503>.
- Jones, D. C., & Kalmi, P. (2009). Trust, inequality and the size of the co-operative sector: Cross-country evidence. *Annals of Public and Cooperative Economics*, 80, 165–195.
- Jones, D. C., & Kalmi, P. (2012). Economies of scale versus participation: A co-operative dilemma? *Journal of Entrepreneurial and Organizational Diversity*, 1, 37–64.
- Karafolas, S. (Ed.). (2016). *Credit cooperative institutions in European countries*. Berlin: Springer.
- Kaushik, S. K., & Lopez, R. H. (1994). The structure and growth of the credit union industry in the United States: Meeting challenges of the market. *American Journal of Economics & Society*, 53, 219–243.
- Kim, D., & McKillop, D. G. (2019). Community, commercial, mutual and cooperative banking. In A. Berger, P. Molyneux, & J. O. S. Wilson (Eds.). *Oxford handbook of banking*(3rd ed.). Oxford: Oxford University Press.
- Kim, H. Y. (1986). Economies of scale and economies of scope in multi-product financial institutions; further evidence from credit unions. *Journal of Money, Credit and Banking*, 18, 220–226.
- Koetter, M. (2008). An assessment of bank merger success in Germany. *German Economic Review*, 9, 232–264.
- Kohers, T., & Mullis, D. (1986). The effects of parent company business on occupational credit union behaviour. *Applied Economics*, 18, 1311–1321.
- Köhler, M. (2014). Business models in banking: How did they evolve and how do they need to be changed in the post-crisis period. *Journal of Financial Perspectives*, 2(1).
- Lang, F., Signore, S., & Gvetadze, S. (2016). *The role of cooperative banks and smaller institutions for the financing of SMEs and small midcaps in Europe*. *EIF Working Paper*, number 36.
- Lang, G., & Welzel, P. (1999). Mergers among German cooperative banks: A panel-based stochastic frontier analysis. *Small Business Economics*, 13, 273–286.
- Leggett, K., & Stewart, Y. (1999). Multiple common bond credit unions and the allocation of benefits. *Journal of Economics & Finance*, 23, 235–245.
- Lensink, R., & Bulte, E. (2019). Can we improve the impact of microfinance? A survey of the recent literature and potential avenues for success. In A. Berger, P. Molyneux, & J. O. S. Wilson (Eds.). *Oxford Handbook of Banking*(3rd ed.). Oxford: Oxford University Press.
- Levasseur, R., & Rousseau, Y. (2002). Social movements and development in Quebec: The experience of the Desjardins movement. *Annals of Public and Cooperative Economics*, 72, 549–579.
- Libertucci, M., & Piersante, F. (2012). *Start-up banks' default and the role of capital*, *Bank of Italy Working paper*, number 890.
- Lin, M., Prabhala, N. R., & Viswanathan, S. (2013). Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer

- lending. *Management Science*, 59, 17–35.
- Liu, H., & Wilson, J. O. S. (2013). Competition and risk in Japanese banking. *European Journal of Finance*, 19, 1–18.
- MacPherson, I. (1979). *Each for all: A history of the co-operative movement in English Canada: 1900–1945*. Toronto: Macmillan.
- Maggiolini, P., & Mistrulli, P. E. (2005). A survival analysis of de novo co-operative credit banks. *Empirical Economics*, 30, 359–378.
- Maimbo, S. M., & Gallegos, C. A. H. (2014). *Interest rate caps around the world still popular, but a blunt instrument*. World Bank Policy Research Working Paper, number 7070.
- Mäkinen, M., & Jones, D. (2015). Comparative efficiency between cooperative, savings and commercial banks in Europe using the frontier approach. *Annals of Public and Cooperative Economics*, 86, 401–420.
- Marshall, L., & Pellerin, S. (2017). *Credit unions: A taxing question*. Federal Reserve Bank of Richmond Economic Focus 20–34 Second Quarter.
- Maskara, P. K., & Neymotin, F. (2019). Credit unions during the crisis: Did they provide liquidity? *Applied Economics Letters*, 26, 174–179.
- McAlevy, L., Sibbald, A., & Tripe, D. (2010). New Zealand credit union mergers. *Annals of Public and Cooperative Economics*, 81, 423–444.
- McKillop, D. G., Ferguson, C., & Nesbitt, D. (1995). Paired difference analysis of size economies in UK credit unions. *Applied Economics*, 27, 529–537.
- McKillop, D. G., & Quinn, B. (2017). Irish credit unions: Differential regulation based on business model complexity. *British Accounting Review*, 49, 230–241.
- McMurtry, J. J., & Brouard, F. (2015). Social Enterprises in Canada: An introduction. *Canadian Journal of Non-profit and Social Economy Research*, 6, 6–17.
- Meriläinen, J.-M. (2016). Lending growth during the financial crisis and the sovereign debt crisis: The role of Bank ownership type. *Journal of International Financial Markets, Institutions and Money*, 41, 168–182.
- Merrett, C., & Walzer, N. (2004). *Cooperatives and local development: Theory and applications for the 21st century*. New York: Routledge.
- Meyer, E. (2018). The new economic scenario and its impact on the cooperative banking business model. In M. Migliorelli (Ed.), *New cooperative banking in Europe* (pp. 29–46). Basingstoke: Palgrave Macmillan.
- Migliorelli, M. (2018). Cooperative banks lending during and after the great crisis. In M. Migliorelli (Ed.), *New cooperative banking in Europe, strategies for adapting the business model post crisis*. Palgrave Macmillan.
- Miller, H. (2013). *Interest rate caps and their impact on financial inclusion*. Economic and private sector. Professional Evidence and Applied Knowledge Services (February 2013).
- Minetti, R., Murro, P., & Peruzzi, V. (2019). *One size does not fit all: Cooperative banking and income inequality*, CASMEF Working Paper, number 2.
- Moody, J. C., & Fite, G. C. (1984). *The credit union movement: Origins and development 1850 to 1980*. Iowa: Kendall/Hunt Publishing Co.
- Mook, L., Maiorano, J., & Quarter, J. (2015). Credit unions: Market niche or market accommodation? *Non Profit and Voluntary Sector Quarterly*, 44, 814–831.
- Murray, J. D., & White, R. W. (1983). Economies of scale and economies of scope in multi-product financial institutions: A study of British Columbia credit unions. *Journal of Finance*, 38, 887–902.
- Neuberger, D., Pedergnana, M., and R'athke-D'oppner, S. (2008). Concentration of banking relationships in Switzerland: The result of firm structure or banking market structure? *Journal of Financial Services Research*, 33, 101–126.
- Ostergaard, C., Schindele, I., & Vale, B. (2015). Social capital and the viability of stakeholder-oriented firm: Evidence from savings banks. *Review of Finance*, 20, 1673–1718.
- Pana, E., & Mukherjee, T. (2010). *Credit unions as liquidity creators, paper presented at financial management association annual meeting*. (New York).
- Patin, R., & McNeil, D. (1991). Member group orientation of credit unions and Total member benefits. *Review of Social Economy*, 49, 37–61.
- Pille, P., & Paradi, J. C. (2002). Financial performance analysis of Ontario (Canada) credit unions: An application of DEA in the regulatory environment. *European Journal of Operational Research*, 139, 339–350.
- Presbitero, A. F., & Zazzaro, A. (2011). Competition and relationship lending: Friends or foes? *Journal of Financial Intermediation*, 20(3), 387–413.
- Ralston, D., Wright, A., & Garden, K. (2001). Can mergers ensure the survival of credit unions in the third millennium. *Journal of Banking & Finance*, 25, 2277–2304.
- Ramcharan, R., Verani, S., & Van Den Heuvel, S. J. (2016). From Wall street to Main street: The impact of the financial crisis on consumer credit supply. *Journal of Finance*, 71, 1323–1356.
- Rauterkus, A., Ramamonjiarivelo, Z., & Munchus, G. (2018). Determinants of credit union deposits during times of an economic crisis: A retrospective view. *Journal of Insurance and Financial Management*, 3, 45–53.
- van Rijn, J., Zenga, S., & Hueth, B. (2019). Do credit unions have distinct objectives? Evidence from executive compensation structures. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3403048.
- Royle, E. (1998). *Robert Owen and the commencement of the millennium*. Manchester: Manchester University Press.
- Safavian, M., & Zia, B. (2018). *The impact of interest rate caps on the financial sector: Evidence from commercial banks in Kenya*. Washington: World Bank.
- Sfar, F. E. H., & Ben Ouda, O. (2016). Contribution of cooperative banks to the regional economic growth: Empirical evidence from France. *International Journal of Economics and Financial Issues*, 6, 508–514.
- Sibbald, A., & McAlevy, L. G. (2003). Further evidence of economies of scale in credit unions: A New Zealand study. *Journal of Applied Economics*, 35, 1255–1264.
- Simon, H. A. (1982). *Models of bounded rationality*. Cambridge, MA: MIT Press.
- Smith, D. J. (1984). A theoretic framework for the analysis of credit union decision making. *Journal of Finance*, 39, 1155–1168.
- Smith, D. J. (1986). Credit union rate and earnings retention decisions under uncertainty and taxation. *Journal of Money, Credit and Banking*, 20, 119–131.
- Smith, D. J., Cargill, T. F., & Meyer, R. A. (1981). An economic theory of a credit union. *Journal of Finance*, 36, 519–528.
- Smith, D. M. (2012). *Commercial lending during the crisis: Credit unions vs. banks*. Madison: Filene Research Institute.
- Smith, D. M., & Woodbury, S. A. (2010). *Withstanding a Financial Firestorm: Credit Unions vs. Banks*. Madison: Filene Research Institute.
- Smith, S. C., & Rothbaum, J. (2013). *Cooperatives in a global economy: Key economic issues, recent trends, and potential for development*, IZA Policy Paper, number 68.
- Stefancic, M. (2010). *Cooperative credit network: Advantages and challenges in Italian co-operative credit banks*, Eurisc Working Papers, number 01611.
- Stefancic, M. (2016). Are cooperative banks better equipped to weather financial crisis than their commercial counterparts? Evidence from the Italian banking sector before and during the credit crisis. *Organizacija*, 49, 108–126.
- Stein, J. C. (2002). Information production and capital allocation: Decentralized versus hierarchical firms. *Journal of Finance*, 57, 1891–1892.
- Stulz, R. (2019). *FinTech, BigTech, and the future of banks*, National Bureau of Economic Research Working Paper number 26312.
- Tatom, J. A. (2005). *Competitive advantage: A study of the Federal tax Exemption for credit unions*. Washington: US Tax Foundation.
- Taylor, R. A. (1971a). The credit union as a cooperative institution. *Review of Social Economy*, 29, 207–217.
- Taylor, R. A. (1971b). Taxation of cooperatives: Some economic implications. *Canadian Journal of Agricultural Economics*, 19, 13–24.
- Thakor, A. V. (2020). Fintech and banking: What do we know. *Journal of Financial Intermediation*, 41(January)<https://doi.org/10.1016/j.jfi.2019.100833>.
- Uchida, H., & Udell, G. F. (2015). Banking in Japan. In A. N. Berger, P. Molyneux, & J. O. S. Wilson (Eds.), *Oxford handbook of banking* (pp. 873–912). (2nd ed.). Oxford: Oxford University Press.
- Uchida, H., & Udell, G. F. (2019). Banking in Japan: A post-global financial crisis perspective. In A. N. Berger, P. Molyneux, & J. O. S. Wilson (Eds.), *Oxford handbook of banking* (pp. 1033–1075). (3rd ed.). Oxford: Oxford University Press.
- Uchida, H., Udell, G. F., & Yamori, N. (2012). Loan officers and relationship lending to SMEs. *Journal of Financial Intermediation*, 21, 97–122.
- Usai, S., & Vannini, M. (2005). Banking structure and regional economic growth: Lessons from Italy. *The Annals of Regional Science*, 39, 691–714.
- Uzzi, B. (1999). Embeddedness in the making of financial capital: How social relations and networks benefit firms seeking financing. *American Sociological Review*, 64, 481–505.
- Walker, D. A. (2016). Credit Unions' rising share of small business loans. *Journal of Accounting and Finance*, 16, 11–24.
- Walter, J. R. (2006). Not your Father's credit union. *Federal Reserve Bank of Richmond Economic Quarterly*, 92, 353–377.
- Walton, J. K. (2015). Revisiting the Rochdale pioneers. *Labour History Review*, 80, 215–248.
- Wheelock, D. C., & Wilson, P. (2011). Are credit unions too small? *Review of Economics and Statistics*, 93, 1343–1359.
- Wilcox, J. A. (2005). Credit union failures and insurance losses, 1971–2004. *Federal Reserve Bank of San Francisco Economic Letter*, 2005–2020.
- Wilcox, J. A., & Dopico, L. G. (2011). *Credit union mergers: Efficiencies and benefits*. Federal Reserve Bank of San Francisco Economic Letter 2011–2028.
- World Council of Credit Unions (2018). *Statistical Report*. https://www.woccu.org/our_network/statreport.
- World Council of Credit Unions (2012). *Credit union shares as regulatory capital under Basel III*. https://www.woccu.org/documents/WOCCU_Credit_Union_Shares_as_Capital.
- Worthington, A. C. (2004). Determinants of merger and acquisition activity in Australian cooperative deposit taking institutions. *Journal of Business Research*, 57, 47–57.