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## Conference paper

How to foster co-operation between the  
Scottish and Irish Asset Management industries

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## Abstract

This paper set outs the case for bilateral co-operation in the asset management industry between Scotland and Ireland. We identify the strengths and weaknesses in the respective countries industries and suggest how industry, government, and technology can be leveraged to capitalize on synergies between the two geographies. In particular, we present the conclusion that it is easier to change the direction of future development than re-invent the past. In this respect, we drill down into Fintech and Robo-advisory as areas of interest for both policy makers and companies alike. Our analysis shows the economic impact from such co-operation will be net positive for both jobs and assets under management.

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NOTE: The Assets under Management and economic data points in the document are estimates as at June 2017 based on the most recent available data.

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## Introduction

Asset management is the professional third party management of financial assets. The industry has always been the shy sibling in the financial world. The public tends to think more about banks and insurance when they think of finance. They also hold onto an inaccurate Hollywood cliché of hedge fund managers and investment bankers which is certainly not the case of asset managers in Glasgow, Edinburgh and Dublin. As the role of an asset manager is that of being a fiduciary intermediary, most of the population in Scotland and Ireland do not deal directly with them. However, asset management is vitally important to both economies.

The asset management industry looks after the pensions and savings of their catchment areas populations. It provides pricing for assets, maintains a healthy market and directs capital to where it's needed. Not only that, it provides high-quality jobs in both its central tasks and in the ancillary services that surround it, such as asset servicing and custody. In short, it's an industry worth preserving, nurturing and developing.

This policy paper highlights ways in which Scotland and Ireland working together can aid each other. In this way, it highlights a small but important way that co-operation can help development of each nation's asset management and asset servicing industries.

Ireland and Scotland have a head start over others to take advantage of any realignment in the industry, with substantially developed financial industries existing already. Scotland brings a tradition of finance going back hundreds of years, and is the birthplace of investment funds as well as the UK's insurance industry. Nowadays it's home to a range of larger investment managers, smaller boutique and hedge funds and fund servicing. Ireland, meanwhile, is a European hub for fund administration, custody and for some of the key operations for international investment banks.

Innovation in attracting business has been a hallmark of both Scotland's and Ireland's success in recent years. This innovation has built up a thriving finance industry in both countries in the last three decades. Both countries can also tap well-respected academic structures, are English-speaking and have well-developed legal systems similar to London, the region's, and possibly the world's, financial capital. In short they are both well placed to take advantage of any political and technological changes and win new business.

The importance of the finance industry to both nations cannot be overemphasized. Ireland has more than £4 trillion of assets under administration, a figure that has increased almost 8 times since 2003. There are more than 500 firms operating in Dublin's International Financial Services Centre, with an average salary of more than £57,000. The centre accounts for 10% of multinational employment in Ireland and provides 13.5% of corporation tax revenues collected in the country.

For Scotland the financial services industry employs 100,000 people directly, and a similar amount indirectly, generating £8 billion for the Scottish economy. It is home to almost a quarter of the UK's life assurance workforce. But why work in tandem? The main answer is that both nations have skills, expertise and experience that would be useful to the other. Obviously there has to be the incentive of both countries bringing in more business working together than they would individually. And for this the countries need to exploit both their shared and complementary attributes.

Bilateral collaboration and improvement in productivity have a complex relationship. The disciplines of economics, organisation, and strategy, as far back as (Coase 1937) argue that businesses often benefit from collaborative relationships. Some (Mitchell and Singh 1992) suggest that incumbent firms take a cautionary view of new technology and as such benefit from pre-entry alliances. Admittedly, (Khanna, Gulati and Nohria 1988) point to instances where such collaboration are not beneficial but we argue Fintech falls into the disruptive context in which alliances are beneficial. (Singh and Mitchell 2005) also suggest that more research is required into informational collaboration.

We argue that the adoption of a policy framework for Fintech as pertains to asset management is important in order for both Scotland and Ireland to remain competitive. In this respect, Fintech and its asset management spin off, Robo-advisory represents both a risk and an opportunity. The latter will be achieved with the right policy response, some suggestions of which are included in this paper.

## Background

As illustrated by the academic literature, there are benefits in co-operation, see (Koza and Lewin 1998). In order for Scotland and Ireland to develop common goals and aspirations around asset management there has to be an incentive on both sides to work together. As a starting point there are threats to the asset management related industries of both locations that should promote a common endeavor, and include the changing political and technological landscape. The best policy response to these is to embrace them as opportunities and provide a nurturing environment to capitalize on them.

As a top down simplification, Ireland is a centre for fund listing, administration and custody. While Scotland does indeed have a well-developed asset servicing industry as well, it has a competitive advantage in front-line asset management. This is an area that's difficult to develop quickly and deliberately through public policy because it requires a critical mass of investors in order to make it worthwhile for companies to visit a location to meet with fund managers. We recommend that Ireland and Scotland should therefore exploit the common interest in this industry and their differing areas of expertise, particularly as relates to the aforementioned political and technological challenges.

On the political side, uncertainty as to whether UK will remain in the single market for financial services creates a situation for companies to future-proof their activities by exploiting links between Scotland and Ireland. Many Scottish, and indeed British, fund managers already base their offshore funds in Dublin (rather than Luxembourg because of the appeal of the similar legal system) and this business is growing. See (Purdue, Huang and Economics 2015) for a discussion of the implications of Brexit on Ireland. While many Scottish fund companies continue to have Britons as their main client base, there is no denying the potential in the vastly bigger European market.

The Scottish and Irish Finance Initiative is politically neutral. From a policy perspective, we suggest all sides of the political debate in Scotland and Ireland can support projects that would help both countries better pay their way; in Scotland's case, whether within or out with the UK. The decline in the crude oil price has served to highlight Scotland's over reliance on the oil industry, where assumptions have been made about ongoing energy prices. Luckily for Scotland, it already has a highly developed finance industry. Funds listed in Dublin, meanwhile, will continue to enjoy the benefits of a single European financial passport

## Scotland

At the time of writing, the Scottish Asset Management sector manages funds totalling £800(e) billion. The majority of this is managed by well-established incumbents but in recent years investment management have enjoyed robust growth. Over 3,300 people work in the asset management industry. Some of the world's largest asset management companies are based in Scotland such as Aberdeen Standard, while there are a number of smaller boutique operations such as Walter Scott and Partners. In asset servicing six out of the ten largest global players by assets under administration have a presence.

The importance of Fintech as a future direction for the asset management industry was highlighted by (Broby and Karkkainen 2016). They demonstrated that the slow adoption of Fintech initiatives in Scotland will result in a lack of competitiveness. The rapid adoption scenario, however would see the creation of 3,885 SME jobs in three years, which means 7,646 total jobs when indirect ones are included. Some of these would be in asset management related areas. As similar scenario could well be painted for Ireland.

## Ireland

At the time of writing, the Irish Asset Management sector manages funds totalling €280 (e) billion. In tandem with this, Ireland's has a well known competitive advantage in the servicing of internationally distributed investment funds. The International Financial Services Centre in Dublin says that it has representation from half of the world's top 50 banks and half of the global top 20 insurance companies.

Ireland as a whole is also a leading global technology hub with state-of-the-art infrastructure. Although there has been no published paper on the impact of Fintech on Ireland, the country is well positioned to benefit from its role as an EU English speaking nation with common law post Brexit. A summary of the impact of Fintech in Irish financial services can be found in (Gibson 2015).

## Discussion

The risk with recent political developments and the current pace of innovation in finance is that the two countries' competitive advantages potentially disappear in a short space of time. We point as evidence to this that Glasgow had a significant asset management industry up until about a decade ago. A series of takeovers and closures mean that it's all but non-existent now. Starting an asset management industry anew is a difficult task, so should avoid this happening in Dublin and Edinburgh. Policy makers should consider it as self-evident that the industry needs a certain critical mass to attract the companies to visit a location promoting their shares and securities. Locational issues, according to (Sokol 2007) who after investigating Irish industry clusters, pointed to the need for them to be readdressed in the digital era.

At the surface it would appear a mark of success for Edinburgh to be home to the combined Standard Life and Aberdeen Asset Management, one of Europe's largest asset management groupings. However, this only increases the risk for a city that until recently had a much greater diversity in its asset management businesses, including an independent Scottish Widows Investment Partnership. All it takes is for a corporate decision, such as the 2004 decision of Abbey National to reduce its Glasgow active fund management proposition, for this to reduce further. We would, however, add for the sake of balance that Dublin, Glasgow and Edinburgh have all won an impressive number of outsourced jobs from London in the past decade.

Ireland, has at first glance been incredibly successful in developing its finance industry. It vies with Luxembourg for the asset servicing location of choice for international funds, and has a very well-developed legal and back-office function to support the wider finance industry. Astute government planning centred around the International Financial Services Centre in Dublin has turned the city's docklands into a mini Canary Wharf, housing many of the world's most famous financial services businesses. However, all this belies a concurrent decline in the country's asset management business, which as stated earlier provides high quality, high income employment and attracts the best and brightest to a location. Housing assets under administration is nowhere near as lucrative as housing assets under management.

The two locations now share a further threat in the form of Brexit. Until this came along, the finance industry has been one of the major beneficiaries of European integration, none more so than the asset management sector. European passporting rules allow funds established and managed in one-member state to be sold across the entire union. Moreover, the EU's UCITS regime is accepted as a worldwide standard of asset management, which has helped European fund managers sell their wares much wider than what is the world's largest trading bloc. This access to markets should be a priority policy objective.

The impending departure of UK from the EU is therefore important because it puts a barrier across what is one of the key corridors in fund management in Europe. Many UK fund managers use Ireland as a location to base their funds for sale across the EU – conversely many international fund managers use Ireland as a base to sell their funds across the EU, including into the UK. The problem is neatly encapsulated by Irish Funds who estimate about 30% of funds registered in Ireland are managed by UK entities, and at the same time about 30% of funds registered in Ireland are sold in the UK.

Our belief is that while these may be UK and Ireland issues, Scotland, because of its tradition and position, holds the key to the solution. We believe the policy response should be to use it as a catalyst in terms to develop a fund corridor that stretches from Ireland across into Scotland. As we highlight, change creates opportunities – now is the time to explore what solutions can be created.

A key recommendation is the endorsement and wholehearted policy support for Financial Technology (Fintech) in Asset Management. This is the all-encompassing word for the financial architecture of the digital age. It covers market infrastructure, payments, settlements, digital currencies, Robo-advisory and data analytics. Its protagonists utilize software and/or programming code to provide financial services.

## Policy solutions

There's no point in locations working together if they share the same characteristics. Our argument for a shared approach to asset management comes from the synergies which are clearly available in the specialisms of both Scotland and Ireland. These synergies are both cultural and very tangible.

To recap, Scotland is one of the oldest financial centres in the developed world. It's the home of centuries-old banks, insurers, asset managers and was the birthplace of the investment trust. The capital to fund the latter part of the global Industrial Revolution was sourced in part through Scottish-based investment vehicles. It is of course now home to fund managers that look after a significant portion of the savings of both UK and international investors. In recent years it has also developed a fund servicing industry that while significant, does not come close to Ireland in terms of magnitude. This is something that will aid in any cross-border initiative.

Ireland is different. Its international finance presence developed only in the past 30 years, aided by forward thinking government planning built around Dublin's International Financial Services Centre. This initiative was initially built on tax breaks, but also utilising a well-educated young population looking for reasonably well-paid jobs that didn't involve leaving the country. That programme has now expanded well beyond the initial policy objectives and turned it into a centre that administers trillions of euros in assets and houses many of the most famous names in global finance.

Any combination however, would not work if there was a complete difference, and both locations share significant commonalities – a similar legal framework (albeit with Scotland's hybrid legal tradition), a strong academic tradition in both finance and the technical specialties needed in Fintech. Both are English-speaking and within close proximity to the major financial centres of Europe and most importantly, London, which no matter what happens, will remain a financial titan.

London does of course loom large and there are two important considerations to mention here. The first is that this initiative is not a threat to London. London's presence in the financial industry is so large that any business transferred from there to either Ireland or Scotland would be peripheral. However, it is also important to point out that this initiative is not at its core about taking jobs out of London. This initiative is designed to provide solutions for financial services companies, many of which are based in London.

Secondly, one of the areas that gives the Scottish and Irish industry space to grow is an over-focus from both regarding London. Scotland's finance industry is to a large extent integrated with the UK capital, however there is room for it to develop business independently of that relationship. Furthermore, when London is deciding on its approach to issues such as Brexit, the health of Scotland will have little weight in those deliberations. Through the course of our work over the past year we have detected what we feel is an over emphasis on the London/Scottish relationship to the detriment of Scotland's ability to plan for its future.

Likewise, there is a focus in Ireland on London that obscures the potential in the Scottish market. In our research we have come across many who've been unaware of the strength of Scotland's asset management industry. While not explicitly so, the implicit target of Ireland, especially in the light of Brexit, has been to target jobs and business from London. While that is quite clearly a sensible aim, this should not again obscure the complementary element of the Dublin and Scotland axis as a solution to those in the London industry.

## Industry Level

At an industry level it is clear that UK asset managers, and the Scottish ones who are a subset of that, are clearly impacted by Brexit. Any barriers will frustrate not only the sale of funds into Europe, home to over 400 million potential clients and some of the largest pension and wealth funds in the world, but also to those consumers outside of Europe, in Asia for example, who invests in European registered securities.

At present the Central Bank of Ireland and the U.K.'s Financial Conduct Authority are the key regulatory authorities in the asset management space, and both at present operate within a European Framework. Going forward the European structure will disappear, so it is vital that the regulators build up an increased understanding of how they will coordinate their activities post-Brexit. What is necessary at a policy level is an enhanced memorandum of understanding that will allow the two regulators to work together. This should include a pre-agreed framework on what is acceptable for funds that straddle the border in any agreement that allows this post-Brexit.

Assessing at first the issue of UK managed funds registered in Ireland, it is evident that there may have to be some increased manpower or responsibility in place within the EU, and therefore in locations such as Dublin. Indeed, companies are already investigating what plans they will have to put into place in relation to MiFID II for example. The aim should be that whatever stipulations are put in place in relation to the level of supervision to take place in Dublin on behalf of funds that are managed in the UK, that this is kept to a minimum.

From a policy perspective, the Irish development authorities should look to put in place a specific stream that will accommodate and ease the placement and transfer of staff from the UK into Dublin for this purpose, with a focus on Scotland as a manageable test sample to lead the way here. The benefits here are clear – Ireland may get to develop its domestic fund management industry should there be some stipulation about management levels in Dublin, and the UK, and Scotland in this case, gets to continue with the lion's share of fund management and analysis taking place domestically.

What about funds presently based in Ireland and sold in the UK? It's clear that fund companies will not want to replicate in full a new line of UK registered funds matching the international funds presently registered in Dublin. However, there may way well

be the need to create some new funds in the UK to plug this gap. The risk for Ireland in this situation is that it loses out on the fund servicing aspect of the securities. This however, need not be the case. Scotland's developing asset servicing industry could play host to the asset servicing requirements of these funds, and there is no reason why some aspects of that servicing could not be outsourced to Dublin. The fact that asset servicing businesses such as State Street have operations in both locations is helpful here. It would be advisable for the Scottish Government to see what it could do to further mark out Scotland as a centre for UK asset servicing.

At this point, we should mention the importance of focus on high value products. Neither Ireland nor Scotland have the scale to compete globally in the provision of passive asset management. That has become a commodity business, typically charging 3 basis points management fee per annum. That compares with active asset management mandates that range from 30-50 basis points, and active mutual funds that can be above 100 basis points. The highest paying fee products are hedge funds, who can charge a performance fee as well. There has been little focus on attracting these funds to either jurisdiction. Certain elements of Fintech, such as machine learning and algorithmic trading, can certainly be developed to address this area.

There are peripheral tasks that could also be done to promote the continued health of the asset management industry in both locations. Indeed, we are encouraged by conversations that at an early stage are looking at fund incubators that could be used to develop this industry.

Overall, we would suggest that the policy agenda include the development agencies in Scotland and Ireland working in tandem to see if they could put into effect the ideas discussed in this section. With the Brexit threat, it's recommended that both governments should lobby for bespoke solutions. Some in continental Europe might want to take on some of the business that at present takes place in these islands and may wish to frustrate any agreement between the EU and UK that would allow the Scottish/Irish corridor to develop. The Irish and UK governments should act, with the support of the Scottish Government, to ensure that these interests are protected in any negotiations. The position of Scotland is important – having voted to remain in the EU there exists in Europe a certain goodwill towards the Scots which may aid in this area.

## Government Level

At this stage it's important to point out that there is much more to creating a conducive environment for industry to flourish than just a narrow regulatory and policy approach. What makes Edinburgh and Glasgow attractive to Dublin, and Dublin attractive to Edinburgh and Glasgow, and all three attractive to London is their proximity. A commute between Dublin and Edinburgh or Glasgow is the simplest among all the cities mentioned, with a flight time of close to 40 minutes and a short airport-to-city centre transfer due to the fact that they are relatively small cities. Contrast the connection between Edinburgh and Dublin, which has as many as eight flights a day, with Luxembourg and Edinburgh where there are far fewer flights. Intelligent planning into the future could make the trip even easier, but at present, with the city centre only 20 min from Edinburgh's airport (the Edinburgh Park business district not more than 10) linking to Dublin's financial district through the Port Tunnel in a 20-minute journey from its airport, this already makes this an easy transition.

The Government of Ireland, in its 2020 financial services plan, already outlines the steps the state can take in promoting industrial endeavor. The Scottish agenda is largely promoted by Scottish Enterprise and Scotland, as a constituent part of the United Kingdom, has for obvious reasons not developed such a significant financial services policy to date. However, there are indications from the Scottish Government that it intends to be more proactive in future. Combining this wider scope about the general and business environment together with a concerted effort on the governments' part to act in consort for policy reasons will aid greatly in the continuation and development of the fund management and asset servicing industries in both locations.

## Technological Level

A significant part of our policy advice is centred on the development of Fintech services, which by definition are less well-established and solutions more aspirational in nature. That said, there is considerable scope to consider possible progress for the asset management communities in both locations in conjunction with this developing sector – Fintech facilitates the policy objective of access to professional asset management as identified in (Claessens 2005).

Importantly, it's worth noting that the asset management industry, as explained in (Broby 2010) is in a state of accelerated change at present due to evolving customer habits. More clients, both professional and retail, are opting for passive investment products, which tend to be cheaper, while wealthier clients and consultants are also examining the prospects for factor and smart beta investing.

It's obvious that traditional asset management firms may have to introduce a mix of some of these products into their range to keep up with clients tastes and maintain a broad-based offering. These types of investments can also lead to increased efficiencies as they are not so labour dependent as traditional long-only active investing. Our aim in the Initiative is to maintain and expand the level of well-paid asset management roles in the two locations. However it is also sensible to factor in changing customer trends. With that in mind the development authorities in both Scotland and Ireland should combine with academia and the established asset management companies to explore the prospects for placing Scotland and Ireland at the forefront of this new type of investing. Well paid jobs for computer engineers working in finance are as valuable as those for asset management graduates.

Returning to the key question, why should Ireland and Scotland work together in this area? The answer is because combined they probably have a critical mass of exceptional financial engineering and traditional financial educational rules and opportunities to support such a venture. Older, more established financial centres such as London, Paris and Frankfurt, given their size are less nimble to be able to facilitate such an endeavor.

## Case Study: Asset management and robo-advisors

The fund management industry is being impacted by Fintech initiatives and as such we present Robo-advisory as a case study. The most prominent fund management initiative is termed Robo-advisors. These can be defined as providers of algorithmically driven and low-cost investment advice on the Cloud. An algorithm takes a view where markets are going and search available products with matching them to clients' circumstances, timelines and goals. Machine learning or artificial intelligence is facilitated. Robo-Advisors not only design portfolios. (Dapp 2014) predicts an increase in algorithmic trading as a result of these trends.

Fund management companies are embracing big data solutions for portfolio construction, optimization and the creation of efficient asset allocation frontiers. Scottish fund managers need to keep abreast of these changes. It is a competitive issue for the individual companies to position themselves as technology savvy. Robo-advisors can grow the intermediaries market. Traditional fund managers should consider developing their own Robo-advisory products for lower fee paying consumers. This would positively affect the part of the Independent Financial Advisory who already use financial modelling tools to match their clients with investments.

Robo-Advisors are expected to manage 10-14% of all the assets in the USA by 2025. The figures are likely to be different in Scotland and Ireland if the Robo-advisors cannot offer as competitive pricing and access as the London, European and US counterparties.

With Robo-advisors, the total expense ratio is higher as the fees charged by them do not cover the underlying costs of third party investments or trades. What is notable however is that the pooling of assets helps to lower those fees. This kind of approach could work for the European based stand-alone Robo-Advisors that have access to the EU single financial market.

## **Conclusion:** Collaboration benefits both Scotland and Ireland

There is no doubt that both Scotland and Ireland have strong existing financial industries with great potential in the future. The ability of similarly sized nations – with much in common, but enough difference to make cooperation useful – to work together in certain areas of finance is something that should be explored urgently in terms of public policy. This will ensure both nations can continue to thrive and punch above their weight in this important global industry.

Thus far we have considered the solutions as reactive, defensive propositions that could aid existing businesses and sectors in the two locations to overcome specific and shared challenges. However, the potential of a Northwest Atlantic asset management corridor from Dublin to Glasgow through to Edinburgh is as much about attracting new business here. As stated already, both locations have the potential for an achievable shared proposition in coming years. Beyond that they also share a lower cost base, both at a corporate and individual level, and highly desirable quality of life compared to more crowded regions of Europe, in particular, the south-east of England. There is no doubt that jobs are performed in London that need not be performed there and could easily be exported to a less crowded and frenetic part of these islands, benefiting both companies and employees.

This of course has been done already both at an asset servicing and asset management level in recent years. The old Scottish Widows Investment Partnership was augmented by the transfer of Hill Samuel staff and assets from London. What is needed to progress this as the viable proposition is a collaboration again between the development agencies of Scotland and Ireland. Tourism Ireland have a combined campaign and strategy including the north and south as they have correctly identified their shared interests in collaborative promotion. This can provide a model for such collaboration.

In conclusion, we suggest three main areas of focus to address future co-operation: (1) establishing a vision at the industry and government level, (2) creating a Fintech bridge to develop a culture of connectedness and (3) establishing a set of actions to support the development and flow cross border initiatives.

## Bibliography

- A T Kearney.** 2015. "Robo-advisory Services Study."
- Broby, D.** 2010. *A guide to fund management*. London: Risk Books.
- Broby, D., and T. Karkkainen.** 2016. "FINTECH in Scotland: building a digital future for the financial sector." *Centre for Financial Regulation and Innovation White Paper*.
- Christensen, C.** 2006. "The ongoing process of building a theory of disruption." *Journal of Product Innovation Management*, 23(1), pp.39-55.
- Claessens, S.** 2005. "Access to financial services: a review of the issues and public policy objectives." *World Bank*.
- Coase, R.** 1937. "The nature of the firm." *Economica* 4: 386-405.
- Dapp, T.** 2014. *Fintech – The digital (r)evolution in the financial sector: Algorithm-based banking with the human touch*, Deutsche Bank Research.
- Deloitte.** 2016. "FinTech Scoping Review, Establishing Scotland as a FinTech centre."
- Gibson, J.** 2015. *The Impact FinTech is having on the Financial Services Industry in Ireland*. Doctoral dissertation, Dublin Business School.
- Khanna, T., R Gulati, and N. Nohria.** 1988. "The dynamics of learning alliances: competition, cooperation, and relative scope." *Strategic Management Journal* 19(3):193-210.
- Koza, M, and A Lewin.** 1998. "The co-evolution of strategic alliances." *Organisation Science* 9: 255-264.
- Mitchell, W., and K. Singh.** 1992. "Incumbents' use of pre-entry alliances before expansion into new technical subfields of an industry." *Journal of Economic Behavior and Organisation* 18(3): 347-372.
- Purdue, D., H. Huang, and N. Economics.** 2015. "Brexit and its Impact on the Irish Economy." *National Treasury Management Agency*, (National Treasury Management Agency).
- Singh, K., and W. Mitchell.** 2005. "Growth dynamics: the bidirectional relationship between interfirm collaboration and business sales in entrant and incumbent alliances." *Strategic Management Journal*, 26(6), pp.497-521.
- Sokol, M.** 2007. "Space of flows, uneven regional development, and the geography of financial services in Ireland." *Growth and Change*, 38(2), pp.224-259.
- Trautman, L.** 2016. "Is Disruptive Blockchain Technology the Future of Financial Services?" *The Consumer Finance Law Quarterly Report*.

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