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THE IMPACT OF FINANCIAL INNOVATIONS ON THE FINANCIAL INDUSTRY'S PERFORMANCE: A STUDY OF BRICS AND G6 NATIONS

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Abstract
The main purpose of this study is to explore the effect of financial innovation on the economic performance of a selection of countries, while doing a comparison between two different blocks of nations; the first one is a set of 6 majorly advanced industrial economies (Italy, Britain, Germany, Japan, France, USA), the second one is no other than the BRICS nations (Brazil, Russia, India, China, South Africa) representing nearly half of the world's population. Therefore, we empirically examine this impact using a panel data set comprised of these countries for the period 1991–2014, we use Panel Data analysis with fixed effects, we hypothesise that financial innovation has a positive effect on financial performance, we empirically test this assumption in two analytical categories, G6 and BRICS countries. After analysis, we find that R&D expenditure and property rights as well as Patent applications are significant in explaining the impact financial innovation has on the financial performance of these countries, but that there isn't a big difference between both analytical sets with regards to this relationship.

Keywords: Financial innovation, Financial performance, BRICS, G6, Economic growth, Panel data

INTRODUCTION

The significance and the weight carried out by finance in any economy undoubtedly highlights the importance of financial innovation since it is a plausible improvement of a financial system, and historically any advances of a financial system have encouraged the democratisation of societies and backed opportunities that allowed for a better future.

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Financial innovation has always existed, it is unquestionably not a new phenomenon; for instance, the first use of credit originated from Babylon, Egypt and Assyria 3000 years ago, the bill of exchange 600 years ago; however, mortgages, investments, small-business credit and stock markets were introduced later on; these innovations reformed many cultures making the study of it too significant to ignore, but even so, there's still is a big dearth of empirical studies on the matter.

Indeed, White and Frame mentioned this problem in one of their papers *"Everybody talks about financial innovation, but (almost) nobody empirically tests hypotheses about it.*"; granted, a variety of descriptive literature considers recent financial innovations (Van Horne 1985; Miller 1986, 1992; Mayer 1986; Cooper 1986; Faulhaber and Baumol 1988; Campbell 1988, ch. 16; Siegel 1990; Finnerty 1992; Merton 1992; Kopcke 1995; Tufano 1995; Lea 1996; Finnerty and Emery, 2002), but astonishingly enough, literature providing quantitative analysis and testing empirical hypotheses is very scarce and insufficient.

Over the past few centuries, financial innovation proved that it was a critical part of the economic landscape, democratising economic participations and shaping many a financial system, and it continues to produce a multitude of financial products or services such as derivatives, bank deposits, warrants, futures, options, mortgage-backed securities, venture capital, securitisation, high yield corporate bonds, etc ; or processes like trading platforms, net present value, Black-Scholes estimation, pricing mechanisms and many other ways to diffuse and distribute securities, or even new organisational forms such as types of banks, exchanges, special purpose vehicles, limited liability corporations, private equity, leveraged buyout firms, etc ... Financial innovation is then like any other innovation in any other industry, a Schumpeterian process where involved parties try to differentiate their services and their products, responding to the consumers' demand and to the changes in the economical scene in an ongoing effort to maximise prof- its.

Due to the distinct characteristics of financial innovation, it is widely recognised that assessing and quantifying the benefits of financial innovation is practically impossible ; many academics, economic writers and other stakeholders agree on this, so the assessment of financial innovation is usually qualitative. The complicated "web of externalities" that involve financial innovation, as expressed by Lerner and Tufano, which comprises all the factors that influence a financial innovation, makes it almost impossible to adequately quantify the costs and benefits of financial innovation to estimate an overall net impact.

The paper is organised as follows, section 2 reviews the supposed impact of financial innovation on financial performance; section 3 paves the way to the empirical analysis by targeting the time series aspects of financial innovations and financial performance. Section 4

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complements section 3 by focusing on cross-sectional evidence estimated using panel data and finally, section 5 presents further discussion of the results of the estimation and concludes.

INSTITUTIONAL BACKGROUND

In this section, we endeavour to explain the reason for our interest in BRICS as an analytical category.

At first sight, the BRICS countries may not look like an evident analytical set, what with the immense dissimilarities when it comes to their economics and political systems, but in spite of that, all of these countries have strong links to the global capitalist economy, current industrial sectors, as well as sizable informal areas of the economy, which runsoutof the control of tax collectors and regulators.

In 2003 Goldman Sachs released a research report that created a new acronym: “BRICs ” these economies being Brazil, Russia, India, and China ; when this report was issued, they jointly represented 15 % only, of the gross national product (GNP) of the United States, Japan, Germany, Britain, France, and Italy, the 6 most advanced economies in the world. Despite the fact, reseachers Dominic Wilson and Roopa Purushothaman, anticipated the possibility that this percentage would rise and be comparable to that of the G6, and that it would do so “in less than 40 years” which could potentially slow off growth in the current more advanced economies.”

The idea captivated much of the international financial press communities, and the term caught up much like the way the phrase ‘emerging markets’ did a few years earlier than that. We aim to critically examines the “BRICS countries’ ”concept with relation to financial innovation.

This group of five countries shares neither the same strengths nor do they share equivalent challenges, and this considered from the angles of domestic politics or even economic structure, the natural choice would be to group countries like Brazil with Argentina or Chile, Mexico, Colombia…; making the concept of the BRICS come out as unnatural and rather forced. Yet, another way to look at it, is to find out if the BRICS countries have merit as an analytical set, because of the comparable implications they have on the larger international political or economic systems, and if advanced industrial countries’ fear of the rise of the BRICS may be justified then.

Which is why it seemed interesting to explore the effects of financial innovation within these two analytical categories, the other category, being the G6 countries -France, Germany, Italy, Japan, UK, USA.

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LITERATURE REVIEW

Let us then begin with an overview of the literature on financial innovation in an effort to duly understand the concept and all its aspects.

On financial Innovation and Financial Performance

A substantial body of research proposes that the relationship between a firm's level of innovation and financial performance should be positive; financial performance is the profitability of a business enterprise measured through various measures such as return on equity, return on assets, processes, new and enhanced products and organisational systems are always coveted by enterprises and individuals because they help reduce costs of production, achieve customer satisfaction and yields bigger profits.

Hence, the impact of financial innovation in terms of return to the innovators and its effects on society has been a subject for theoretical literature, which led to the following results : Innovation generally does seem to have positive effects in raising the financial performance of innovators and financial innovation, in particular, it can be essential while facing the main problems that financial intermediation faces in developing countries: the high costs and the high risks.

The transaction cost innovation theory argues that the main characteristic of financial innovation is transaction costs' reduction, the theory explained from another perspective that the primary goal of financial innovation is the financial institutions' purpose of earning benefits. Similarly, new organisational structures, processes and new products can help address the challenge of long-term financing, but, financial innovation in most cases is introduced by financial institutions out of necessity, these institutions rarely are interested in innovating, they are mainly forced to do so thanks to competitive pressure; financial innovation is usually imported from market players, mostly private, however not always profit-oriented.

Automated teller machines (ATMs) for example, popularised in the early 70s and quickly propagated throughout the 80s, they considerably facilitated bank account access and boosted its value by giving clients an around-the-clock access to their funds.

Over the past decade, remote access has migrated to online banking, allowing customers to monitor their accounts and originate payments using "electronic bill payment," which is now widely used. Telephone and online banking are other ways that banks have innovated.

On online bank performance, researchers report that Internet adoption increased community bank profitability in the US and mainly through deposit charges, and so, online banking is usually connected with lower transaction costs and greater profits, although a big

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faction of research papers argue that the Internet, as a channel isn't a substitute for actual physical branches in any way, but a mere supplement.

Still, while assessing the business value of the e-banking distribution channels, it was found to be a resource providing efficiency, competitive advantage, market expansion and supports customer satisfaction.

In their study on the diffusion of financial innovation through the study of the adoption of credit scoring by small businesses is some Latin American banking organisations, Akhavein et al (2005) established that large banks that adopted small business credit scoring performed better financially than those banks that used conventional ways.

Web technology provides situation-specific or personalised communication, customer relationship management (CRM) for instance, collects and analyses data for specific client needs and can provide instant feedback on the services or products requested if available.

Other innovative products and services apart from web banking that contributes to the bottom-line include Prepaid Cards, Automated Clearinghouse (ACH), Small Business Credit Scoring, Asset Securitisation, Risk Management and mobile banking.

METHODOLOGY

In this section, we empirically investigate if financial innovation has a significant impact on the economic performance of the G6 and BRICS countries using multiple-regressions analysis, our first concern is to determine the right proxies for this method; and in order for that to be accomplished the first two questions that need to be answered is how to exactly represent financial innovation in a country, and of course finding measures that apprehend sufficient aspects of economic performance and financial development which is particularly difficult and the reason for that is owed to the intricate nature and to the functions the financial sector serves in the economy of a country.

Measuring Financial Innovation Components

Innovation requires a mixture of inputs and a creation of outputs [Stone et al. (2008)]. An d so, some inputs are essential towards the occurrence of innovation, just like the type of those inputs depends on the expected outcomes. This particular segment succinctly recapitulates how we can measure financial innovation elements, focusing on the inputs and outputs of innovations in the financial services industry.

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- Financial Innovation Inputs

Which are the resources and assets (if frequently used)set up and used in the innovation process, these inputs can either be tangible (physical and have costs) or intangible (not physical but may have costs such as intellectual assests) (Gamal, (2011)).

According to previous empirical studies on financial innovation, we can name a few inputs involved in the financial innovation process, in order to model innovation performance. These inputs can be *I.T Capital (I.T. Expenditure as a Proportion of Total Operating Costs), Financial R&D Intensity (Financial R&D Expenditures as a percentage of Total Operating Costs), Composite Input Measure (composite input measure), Human Capital (Share Research/Technical Staff to Total Staff Strength; Staff Education/Training Expenditure as a Proportion of Total Operating Costs).*

Measuring financial innovation inputs proves to be an arduous project (Arnaboldi and Rossignoli (2015)), the reason for that is that banks are not only creators of innovations but also users of other innovations borrowed from other sectors, so relying on research and development costs as a measure for innovation creation is unsatisfactory (Frei, Harker and Hunter (1997)).

- Financial Innovation Outputs

Innovative activity produces innovation outputs. Some measures can be the number of patents on financial products and services, workforce size, workforce experience, innovative products and processes created, structural changes, knowledge, business models, scientific publications, etc.

In short, outputs are hard to define, they are unforseeable and relies completely on elements of opportunity, risk and chance, whereas the inputs to innovation are effortlessly identifiable (assets and resources).

Data pertaining to innovation may be gathered from a few sources, financial innovation surveys for instance, financial press and media, bank annual reports and websites.

- The Impact of Financial Innovation

Financial innovation is related either directly or indirectly to several measures of performance. The researcher ought to focus on collecting data correlated with the Financial performance of banks (return on assets (ROA), return on equity (ROE), non-performing loans (NPL), bank market share, etc) ,Financial stability and Real economy(GDP growth, inflation, measure of leverage, net foreign exchange, earnings to interest, real exchange rates, monetary aggregates,

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real interest rates, growth in bank credit, bank leverage ratios, liquidity ratios, market volatility, etc).

Variables and data

Scientists in the past have used a number of measures for technological innovation, variables such as R&D expenditure, the innovation index, or less direct measures like Total Factor productivity which is distantly related to technological innovation and its fluctuations are a bit harder to understand; but the real trouble with these measures is that they are not available for most developing countries.

We decided to use P*atent Data* as a proxy for technological innovation, which has numerous advantages, starting with the fact that patent data is the most direct measure of innovative output, as the invention passes through the scrutiny of patent offices testing its novelty and utility as well as marketability; in fact the theoretical literature argues that patent data constitutes the most concrete representation of the innovative output by a country (see Stern and Al (2000)). The *choice of this variable was also motivated by the fact that it allows us to isolate to a certain extent the effect of the financial sector on technological innovation*, this is supported by evidence from the research of Comanor and Scherer (1969) that showed that patent data reflects less government contract work than it does private research since the latter tends to be of a superior quality, we compute average growth rates of patent applications to construct our data.

Empirical measurement of the link between innovation and future performance is fairly problematic, data on R&D expenditures is a natural choice as a proxy for innovation efforts, but it only represents only one of the several in- puts into the innovation process (Matolcsy and Wyatt, 2008), we represent the infrastructure side of R&D activities, by R&D expenditure data, for there are no techno- logical advancements without adequate infrastructure and funding from various institutions, governments and businesses. To better understand the role R&D plays in explaining performance, and in contrast to prior studies that solely focused on the inputs into the innovation process (i.e., R&D outlays) we also employ measures of R&D outputs.

Having determined a proxy for innovative output, we now proceed to select indicators that will represent every possible aspect of financial performance and development, which empirically, is very hard to achieve because it's very hard to predict how the financial sector and its complex functions are interlinked; therefore, we select four indicators which have been proposed in the literature in order to fully perceive the different expressions of financial performance and financial development.

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The first indicator, the ratio of private credit by deposit money banks to GDP which is basically the financial resources provided to the private sector by domestic money banks as a share of GDP, it measures the action of passing savings to investors, as the financial sector develops, more funds are transferred from savers to investors; acting as the most accurate manifestation of the central function of the financial sector, which is, effective intermediation of funds. The ratio of liquid liabilities to GDP, or financial depth, has to be the most utilised indicator of financial development; liquid liabilities measure the size of the financial sector with no separation between the natures of the liabilities (see Beck et al, 1999).

We use liquidity as a financial development indicator with some reservations since the measure has received moderate criticism implying that a high level of liquidity can indicate a dearth of alternative assets that can be employed to store value (See De Gregorio and Guidotti, 1995). We measure stock market development by market capitalisation as a proportion of GDP. This measure equals the total market value of listed shares divided by GDP.

The assumption behind this measure is that it is less arbitrary than any other measure of stock market development (Demirguc-Kunt and Levine, 1996). The annual data was ob- tained from IMF- World Bank World Economic Indicators and World Bank.

Turnover ratio was used as proxy for stock market performance, stock market turnover is a common indicator for stock market activities within the financial system (Levine & Zervos, 1998).

Cross-country growth comparisons further emphasise the central role of Financial innovation in economic growth; the level of Financial development, as measured by the ratio of private credit to Gross Domestic Product (GDP) shows whether a country converges to be a technological leader; in their paper, Michalopoulos, Laeven, and Levine (2009) suggested that it is the rate of Financial innovation that determines the likelihood of a country converging to the growth rate of the frontier economy, they found that by using the growth rate of the ratio of private credit to GDP as an empirical proxy for Financial innovation, the evidence is consistent with the view that Financial innovation is crucial for economic growth.

They described the growth rate of private credit to GDP as an unsatisfactory measure of improvements in screening technology, but that there was value in incorporating Financial innovation into their models of entrepreneurship and growth.

Following their lead, and for reasons of convenience, we decided to utilise the same proxy to represent financial innovation for our study combined with other variables. We brought into play a couple of other “control” variables, the first of which is the real GDP per capita indicator in order to capture the translation of a country’s Knowledge stock into a real state of economic development (see Porter and Stern, 2000).

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The Data used in this study was collected from the World Bank Data, the Heritage Foundation, the Wall Street Journal, the World Intellectual Property Organisation (WIPO) and retrieved from FRED, the Federal Reserve Bank of St. Louis.

Econometric modelling and estimation method

As previously mentioned, the focus of this study is the impact of financial innovation on financial performance and development; the general consensus dictates that technological innovation determines future economic conditions (growth and performance).

We hypothesise that financial innovation has a positive effect on financial performance, we empirically test this assumption using a panel data and two analytical categories, G6 and BRICS countries.

Our data set comprises of yearly observations over the period 1991- 2014 for for the five fast developing countries namely Brazil, Russia (the data set is available from 1990 onwards), India, China and South Africa (BRICS countries), and the G6 countries, with a total of 286 observations. The dependent variables in our study is the ratio of private credit by deposit money banks to GDP (PCDM) and the independent variables chosen, are based on previous literature and availability of dataset for the selected period. The independent variables in our estimation generally include Patent Applications by residents, Financial Depth, Financial Innovation, R&D expenditures, Market Capitalisation, Property Rights Index,Trade Openness, Human capital, Stock Market Turnover and Inflation.

In connection with discussions of the previous section, we propose an estimation model as follows:

$$PCDM= \beta 0+\beta 1\ FD+\beta 2\ MC+\beta 3\ \ SMT+\beta 4\ FI+\beta 5\ RDEX+\beta 6\ PAT+\beta 7\ IPR+\beta 8\ OP+\beta 19\ HUM+\beta 10\ INF+\ U$$

Where:

PAT= Patent Applications by residents; PCDM= Private Credit by Deposit Money; FD= Financial Depth (Liquid Liabilities); FI= Financial Innovation; RDEX= R&D expenditures; MC= Market Capitalisation; IPR= Property Rights Index; OP= Trade Open- ness, CAP= GDP per capita; HUM= Human capital; SMT= Stock Market Turnover; INF= Inflation.

Panel data Analysis

The panel data analysis is a pooled cross section and time series data which allows us to exploit the time series nature of the relationship between economic performance, financial innovation and their determinant variables for selected countries (our panel procedure control for specific effects).

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The Panel data model includes three different methods: Common constant, Fixed effects, Random effects ; in our study we estimate the random effects and the fixed effects methods in order to determine the best fit of the estimation, and since the common constant method suggests that there are no dissimilarities between the cross-sections and is applicable under the assumption that the data set is homogeneous, in our case it is more interesting and less restrictive to estimate Fixed and Random effects (Asterious, 2006).

EMPIRICAL RESULTS AND DISCUSSION

The descriptive statistics and correlation results for the selected variables are given in Table-1 and 2 respectively. The HUM value observation in the estimation is 88 whilst the other variables are having 193 to 268 observations. PAT has the highest mean and standard deviation of 75047.46 and 127129.3 respectively in the data distribution.

Table 1: Descriptive statistics.

	FD	FI	HUM	INF	IPR	MC	OP	PAT	PCDM	RDEX	SMT
Mean	84.06401	2.743604	0.790932	30.22127	62.74793	85.31553	43.44569	75047.46	82.09615	1.717720	93.92884
Median	65.35859	1.695393	0.858000	2.900000	62.50000	68.03000	45.65000	16454.00	83.22148	1.650000	78.58000
Maximum	239.2667	39.66880	0.916000	2075.900	90.00000	276.6000	110.5800	801135.0	202.1996	3.580000	480.2900
Minimum	11.46370	-28.47356	0.483000	-1.400000	20.00000	10.00000	15.58000	138.0000	5.652548	0.570000	3.650000
Std. Dev.	52.59268	8.032475	0.118065	191.5573	22.46229	55.77439	16.75724	127129.3	44.87284	0.815942	72.94486
Skewness	1.275908	0.855880	-0.737918	9.003939	-0.233636	1.288040	0.295700	2.384020	0.475918	0.482472	2.149648
Kurtosis	3.772412	6.833708	2.275981	88.63514	1.876908	4.520627	3.082706	9.567682	2.698794	2.026124	9.784114
Jarque-Bera	72.26860	176.2744	9.908412	85510.55	14.92008	77.55362	3.892815	694.3655	10.46553	15.11473	556.3828
Probability	0.000000	0.000000	0.007054	0.000000	0.000576	0.000000	0.142786	0.000000	0.005339	0.000522	0.000000
Sum	20511.62	658.4649	69.60200	8099.300	15185.00	17745.63	11382.77	18987007	20688.23	331.5200	19443.27
Sum Sq. Dev.	672135.6	15420.44	1.212730	9797352.	121597.6	643931.9	73290.11	4.07E+12	505406.5	127.8262	1096116.
Observat-ions	244	240	88	268	242	208	262	253	252	193	207

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The correlation test shows that some of our variables are highly correlated, the existence of high correlation among the independent variables will lead to the problem of multicollinearity in the estimation. Still we regard these variables because of the panel data estimation solves collinearity problems. According to Gujarati and Porter (2008), serious problem of multicollinearity exists when Pearson's correlation coefficients between independent variables in the model exceed these 0,8 threshold. As presented in Table 2, it is possible to continue with the estimation.

Table 2: Correlation test

	FD	FI	HUM	INF	IPR	MC	OP	PAT	PCDM	RDEX	SMT
FD	1.000000	-0.146851	0.322875	-0.590456	0.150440	-0.277434	-0.074941	0.696386	0.514840	0.668814	0.266398
FI	-0.146851	1.000000	-0.224017	0.202340	-0.198807	-0.130153	-0.241124	-0.204914	-0.122042	-0.367288	-0.042768
HUM	0.322875	-0.224017	1.000000	-0.700274	0.689324	-0.206630	0.013126	0.162254	0.085608	0.746313	0.408008
INF	-0.590456	0.202340	-0.700274	1.000000	-0.546216	0.056793	0.007481	-0.378490	-0.381177	-0.721544	-0.258493
IPR	0.150440	-0.198807	0.689324	-0.546216	1.000000	0.176696	0.037469	-0.079426	0.135639	0.648814	0.217282
MC	-0.277434	-0.130153	-0.206630	0.056793	0.176696	1.000000	-0.033572	-0.068812	0.332077	-0.110297	-0.273560
OP	-0.074941	-0.241124	0.013126	0.007481	0.037469	-0.033572	1.000000	-0.343677	0.329347	-0.116436	-0.021893
PAT	0.696386	-0.204914	0.162254	-0.378490	-0.079426	-0.068812	-0.343677	1.000000	0.254003	0.566883	0.404964
PCDM	0.514840	-0.122042	0.085608	-0.381177	0.135639	0.332077	0.329347	0.254003	1.000000	0.166459	-0.029812
RDEX	0.668814	-0.367288	0.746313	-0.721544	0.648814	-0.110297	-0.116436	0.566883	0.166459	1.000000	0.440992
SMT	0.266398	-0.042768	0.408008	-0.258493	0.217282	-0.273560	-0.021893	0.404964	-0.029812	0.440992	1.000000

We estimate Panel data analysis including OLS pooled regression (Common constant method), Fixed effects method and Random effects method for the selected study period. The robustness of parameter coefficients are used to explain the relationship be- tween the selected independent variables.

The random effects model is rejected in the analysis based on Hausman specification test (1978). The estimation results of both Fixed effects and Random effects model are given in Table 3. However, we show both results but we discuss only the results of the fixed effects model.

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Table 3: Fixed and random effects estimation.

Explanatory variables	FE		RE	
FD	1.206976*	(10.53790)	0.772585*	(24.98963)
FI	-0.010478	(-0.060925)	-0.003797	(-0.024028)
HUM	-20.17256	(-0.235737)	139.4250*	(9.057820)
INF	0.988810	(1.371310)	-0.695144	(-1.340352)
IPR	0.557041*	(2.163184)	0.472309*	(6.087785)
MC	-0.077668	(-1.182360)	0.417849*	(19.88306)
OP	-0.690391**	(-1.983540)	0.843579*	(14.11073)
PAT	4.30E-05**	(1.978946)	5.95E-05*	(4.833692)
RDEX	-73.10664*	(-6.026564)	-50.75139*	(-16.48274)
SMT	0.022905	(1.196543)	-0.000878	(-0.065672)
Adjusted R-Squared	0.975268		0.793608	
Hausman test (prob> chi^2)	10 (0.000)			

We use dummy variables to estimate the pooled regression, we set a dummy variable for each country in our study, then perform Wald test to decide on the appropriate model; as a result, the F-statistic is (0.000) indicating that the fixed effects model is the way to go, results are presented in Table 4.

Table 4: Pooled regression

Explanatory variables	Coefficients	T-stat
C(1)	145.5311**	1.856410
C(2)	-0.010478	-0.060925
C(3)	0.022905	1.196543
C(4)	1.206976*	10.53790
C(5)	-0.077668	-1.182360
C(6)	-73.10664*	-6.026564
C(7)	4.30E-05**	1.978946
C(8)	0.988810	1.371310
C(9)	0.557041*	2.163184
C(10)	-0.690391**	-1.983540
C(11)	-20.17256	-0.235737
C(12)	-91.36135*	-3.839788

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Table 4...

C(13)	-82.80933**	-1.896747
C(14)	12.33133	0.911176
C(15)	21.48669	1.389206
C(16)	-113.2556*	-2.775834
C(17)	-56.45775*	-2.250684
C(18)	-60.08934*	-3.388605
C(19)	-47.36302	-1.533086
C(20)	39.40069	0.930113
C(21)	-11.14033	-0.545639
R-squared	0.984101	
Adjusted R-squared	0.975268	

Table 4 displays the results of fixed effects model confirming the significance of Financial depth (FD), R&D expenditure (RDEX), Intellectual property rights (IPR) at 5% level of significance; Patent applications by resident (PAT) is significant at 10% level. The co-efficient signs for each of these variables are positive for Stock Market Turnover (SMT), Financial Depth (FD), Patent applications by residents (PAT), Inflation (INF) and Intellectual property rights (IPR) and negative for Financial Innovation (FI), Market Capitalisation (MC), R&D expenditure (RDEX), Trade openness (OP) and Human capital (HUM).

CONCLUSION

The contribution of this paper to the literature is twofold. First, it is one of the few empirical studies of financial innovation. Second, it focuses on innovation in a key global financial market (G6 and BRICS), in this paper we investigate financial innovations and their impact on financial performance in these countries. We found that R&D expenditure and property rights as well as Patent applications are significant in explaining the impact financial innovation has on the financial performance of these countries, although this impact doesn't vary dramatically from an analytical set to another but this impact is clearer in G6 countries which have registered more positive coefficients than those of the BRICS countries.

IMPLICATIONS OF THE STUDY

This study is an interesting addition to the empirical studies on financial innovations, which there aren't many due to the difficulty that resides in quantifying measures of financial innovation. An interesting way to develop this research is to examine the impact of financial innovations on the

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structure of the financial services and their regulations in these same countries, introducing new variables and explaining the transformative, and somewhat disruptive, impact financial innovations has on the financial services.

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