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Digital financial inclusion: A silver bullet for entrepreneurship in South Mediterranean countries [1]

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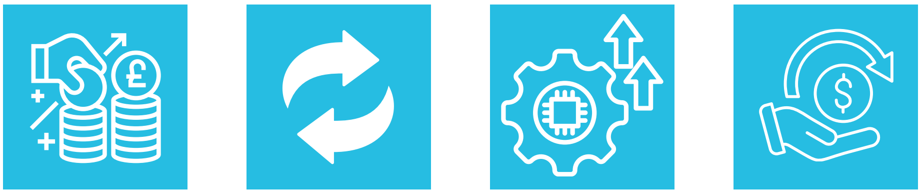
1. Executive Summary

This policy brief aims to carry out an in-depth analysis of the extent to which digital financial inclusion contributes to boosting entrepreneurship in South Mediterranean countries, namely Algeria, Egypt, Jordan, Morocco, and Tunisia, where entrepreneurs are hallmarked by running into indubitable challenges and more intractable difficulties in accessing finance. The current research undertaking has unearthed that digital financial inclusion plays a significantly important role in stimulating entrepreneurial activities in South Mediterranean countries.

More specifically, the results provide irrefutable evidence that a mere 1% increase in the digital financial inclusion index has the potential to generate a 5.79% improvement in entrepreneurship in these countries. By the same token, the results gleaned disclosed that entrepreneurship can relentlessly thrive in an environment that guarantees sufficient economic freedom. Stated differently, digital financial inclusion and economic freedom are two sides of the same coin. They go hand in hand. And nowhere do they blend more perfectly and more powerfully than in an economy where entrepreneurs face literally zero barriers along the way. More interestingly, such results could prove substantially important to policymakers and stakeholders as they clearly show where policy actions to instigate South Mediterranean countries' entrepreneurial activities are most likely to bear fruit.

2. Introduction

Digital financial inclusion has recently emerged as a novel financial paradigm that is inexorably growing by leaps and bounds. It has been the epicenter of a great deal of attention within the academic community and policy arenas owing to its ability to overcome the antagonistic relationship holding between the traditional, mostly outdated financial systems and entrepreneurship, connect financially underserved and unserved people at the entrepreneurial level, and provide them with easy and affordable access to a plethora of financial services (Ahmad et al., 2021; Holzmann and Gregori, 2023; Yu et al., 2024).



In fact, digital financial inclusion integrates the strengths of digital technology into financial services. Hence, it can, when used at a large scale, eradicate all manner of existing time and space stiffening constraints. It can also break down traditional boundaries, serve a broader group of people at a lower cost, and provide a favorable credit environment for entrepreneurship (Song et al., 2024).

One of the other widely known praiseworthy trappings of digital financial inclusion is that it has empowered many individuals and households up and down the globe to readily bypass conventional procedures such as mandating a large amount of collateral to mitigate most of the nerve-boggling losses emanating from information asymmetry and uncertainty regarding the outcomes of entrepreneurial projects due to the high-risk nature of entrepreneurial activities and the comparatively high failure rates of new ventures (Lu et al., 2022; Mao et al., 2023). As far as we are aware, there is virtually a complete lack of literature that casts light on the role digital financial inclusion can play in promoting entrepreneurship in South Mediterranean countries. This has led to a major research gap, as these countries still lag behind in terms of both digital financial inclusion and entrepreneurship.

According to the World Bank's 2021 Global Findex database, the share of adults who made or received digital payments accounted for 36% in Jordan, 34% in Algeria, 30% in Morocco, 28% in Tunisia, 20% in Egypt, and only 14% in Lebanon. It goes without saying that these percentages pale in comparison to the 97% recorded in the Euro area, as well as the 64% recorded in the world. This massive difference unambiguously reflects the limited use of digital financial services in the southern Mediterranean region (World Bank, 2021). In 2022, the new business density rate (the number of newly registered limited liability firms per 1,000 people in the age group 15-64) reached 2.57 in Morocco, 1.67 in Tunisia, 0.63 in Algeria, 0.4 in Jordan, and 0.27 in Egypt, while it accounted for 3.8 on the other side of the Mediterranean, specifically in the European Union, and 3.4 in the world. This patently reflects the small amount of entrepreneurial activity in the southern Mediterranean region. By way of example, the number of newly established companies in Algeria, Jordan, and Egypt is fewer than one company per one thousand people (World Bank, 2024). These figures clearly reveal that there is significant scope for further efforts to attain more realistic improvements in both digital financial inclusion and entrepreneurship in these countries.

The current policy brief attempts to contribute as tangibly as possible to filling the aforesaid research gap and enriching previous literature on the topic at hand. First, it aims to carry out an in-depth analysis of the extent to which digital financial inclusion contributes to boosting entrepreneurship in South Mediterranean countries, namely Algeria, Egypt, Jordan, Morocco, and Tunisia, where entrepreneurs are hallmarked by running into greater challenges and more intractable difficulties in accessing finance. This usually triggers off unequal financing opportunities in entrepreneurial activities. The digital financial inclusion-entrepreneurship nexus has never received any scholarly interest as far as these countries are concerned. Second, this research undertaking seeks to gauge the amount of improvement in entrepreneurship if the level of digital financial inclusion is enhanced in these countries using the fixed effects and random effects models during the period spanning from 2006 to 2021.

Third, to procure irrefutable confirmations of the validity of the baseline regression results, our study conducts a number of robustness checks, viz., substituting the dependent and independent variables, applying a different estimation technique, namely the Arellano-Bond difference GMM estimator, using instrumental variables, and incorporating additional control variables into our analysis. The present policy brief, therefore, could be reliably used as a starting point for future research on the intersection between digital financial inclusion and entrepreneurship in the Southern Mediterranean region. With regard to its practical value, our policy implications will be valuable and provide useful insights for international institutions and policymakers across the Southern Mediterranean and beyond.

3. Mediterranean Context

The World Bank's new business density rate (the number of newly registered limited liability firms per 1,000 people in the age group 15-64) is a commonly used indicator of entrepreneurial activity. In 2022, it reached 2.57 in Morocco, 1.67 in Tunisia, 0.63 in Algeria, and 0.27 in Egypt. To conspicuously discern the massive difference between countries in the European Union and those South Mediterranean countries, it is worth knowing that the new business density rate reached 3.8 on the other side of the Mediterranean, specifically in the European Union, and 3.4 in the world. These figures plainly reflect the small amount of entrepreneurial activity in the Southern Mediterranean region. Having said that, we should not lose sight of the glaring fact that the entrepreneurial activity has witnessed a slight improvement recently compared to 2020, when the new business density rate reached 2.27 in Morocco, 1.52 in Tunisia, 0.51 in Algeria, 0.4 in Jordan, and 0.21 in Egypt (World Bank, 2024). As a matter of fact, there exists a range of clear differences between these countries. New business density rates are said to be exceptionally low in Algeria, Jordan, and Egypt. Stated differently, the number of newly created companies is less than one company per thousand people in these three countries. This could be fundamentally attributed to weak formal sectors and their role in deterring entrepreneurial activities, the cumbersome business environment, and the woeful inability to obtain the necessary funds.

When we attempt to address the most fundamental dimension of digital financial inclusion, the most noticeable fact that we observe is that the minimal use of digital channels for financial transactions and services discloses the low level of digital financial inclusion in the South Mediterranean region. The incredibly puny performance meets the eye when looking at the percentage of adults who make or receive digital payments, which amounted to solely 36% in Jordan, 34% in Algeria, 30% in Morocco, 28% in Tunisia, 20% in Egypt, and only 14% in Lebanon. These percentages pale in comparison to the 97% recorded in the Euro area, as well as the 64% recorded in the world (World Bank, 2021). This major discrepancy sheds light upon a prodigious digital divide within the South Mediterranean region.

It signals, amongst an array of things, that a large proportion of this region's population does not adequately benefit from the many and varied merits offered by digital financial services. Similarly, it demonstrates that the potential for digital financial inclusion in this area remains largely untapped, which has the inevitable consequence of leaving massive scope for significant improvement in enhancing the use of digital channels to promote digital financial inclusion.

This can be accomplished, at least partly, through ameliorating technological infrastructure, improving digital literacy, removing excessive regulatory restrictions that persistently hinder FinTech innovations, developing new products, and deploying new digital financial solutions. Having said that, it is worth drawing attention to the fact that the aforesaid percentages recorded in 2021 remain substantially higher than those recorded in 2014. Stated more lucidly, the percentage of adults who make or receive digital payments reached 28% in Algeria, 17% in Morocco, 17% in Tunisia, 13% in Jordan, and 8% in Egypt in 2014. This unambiguously reflects the slight improvement in digital financial inclusion in South Mediterranean countries. Lebanon, however, remains an exception owing to the fact that the aforementioned percentage accounted for roughly 33% in 2014, which is much higher than the percentage recorded in 2021. This can be attributed to the debilitating financial and economic crisis Lebanon has been enduring since 2019, coupled with the grievous financial collapse that crippled most, if not all, of its institutions.

In the same vein, we can look closely at an integral part of digital financial inclusion and consider the percentage of adults who use mobile phones or the Internet to make payments, buy things, or send or receive money online. It is worth mentioning that this percentage reached 10% in Morocco, 7% in Jordan, and 6% in Tunisia, 4% in Algeria, 2% in Egypt, and 1% in Lebanon, while it accounted for 62% in the Eurozone and 39% in the world. This patently reflects the very limited use of digital financial services in the Southern Mediterranean region. The 2021 Global Findex database reports that low levels of digital financial inclusion in this region could be ascribable to many factors, like utmost remoteness, high cost, lack of funds, lack of documentation, distrust in financial institutions, as well as religious reasons (World Bank, 2021).

4. Approach and Results

The empirical analysis is based on annual data covering the period from 2006 to 2021 for 5 South Mediterranean countries, namely, Algeria, Egypt, Jordan, Morocco, and Tunisia. Sample size and time period were determined primarily based on data availability. Our model includes the following variables: Entrepreneurship (ENTRP) as the dependent variable, which is directly represented by the new business density rate (new registrations per 1000 people in the age group 15-64). Data are taken from the World Bank's Entrepreneurship Database. Furthermore, we use the self-employment rate (the percentage of self-employed workers to total employment) as an alternative measure of entrepreneurship (ENTRPA) to test the robustness of the baseline regression results. Data are taken from the World Development Indicators database. There is a set of explanatory variables, which includes: Digital Financial Inclusion (DFI), Heritage Foundation's Economic Freedom Index (EFH), the Fraser Institute's Economic Freedom Index (EFF), Investment Profile (INVP), Financial Development Index (FD), Frontier technology readiness index (TR), Gross Domestic Product per capita growth (GDPP), and Human Development Index (HDI).

This study applies static panel data models, namely the fixed effects (FE) and random effects (RE) models, to examine the impact of digital financial inclusion on entrepreneurship in South Mediterranean countries. Our empirical models build on earlier contributions of Liu et al. (2022), Shao et al. (2023), and Li et al. (2024). In order to check whether the baseline regression results gleaned are robust, we used an alternative measure of entrepreneurship and different alternate independent variables. We also applied the Arellano-Bond difference GMM estimator, which is a powerful econometric method that can address any potential endogeneity bias (Arellano and Bond, 1991; Arellano and Bover, 1995; Hansen and West, 2002).

[1] For an extensive discussion of the literature see also Neaime (2000, 2004, 2008, & 2010, 2012, 2015a, 2015b, 2016, 2017, 2018a, 2018b), Mansoorian and Neaime (2003), and Neaime et al (2023).

in economic freedom (EFH) can generate a 2.09% increase in South Mediterranean countries' entrepreneurial activity. In the same vein, the multiplicative interaction term between digital financial inclusion and economic freedom (DFIEFH) carries the expected positive sign and is statistically significant, implying that the combined effect of digital financial inclusion and economic freedom appears to be of paramount importance to foster entrepreneurship in South Mediterranean countries.

To ensure the robustness of our baseline regression results, we test them from multiple perspectives by employing the following different robustness-checking methods: substituting the dependent and independent variables, applying a different estimation technique, namely the Arellano-Bond difference GMM estimator, using instrumental variables, and incorporating additional control variables into our analysis.

First, we use the self-employment rate (ENTRPA) as an alternative measure of entrepreneurship, as well as different alternate independent variables, such as the financial development index (FD), the frontier technology readiness index (TR), the multiplicative interaction term between them (FDTR) as an alternative proxy for digital financial inclusion, and the Fraser Institute's economic freedom index (EFF). Second, we apply the Arellano-Bond difference GMM estimator, which is a powerful econometric method that can address any potential endogeneity bias. Third, we incorporate additional control variables into our analysis to revalidate our regression results.

In fact, the results of robustness checks are consistent with the baseline regression results. Framed differently, the impact of digital financial inclusion on entrepreneurship remains significant and positive. The coefficient size and significance level have not deteriorated and remain robust, even after employing the above-mentioned robustness-checking methods and addressing potential endogeneity issues. Ultimately, these robustness checks further validate our baseline regression results and evidently confirm that they are robust.

5. Conclusion

The current undertaking has unearthed that digital financial inclusion plays a significantly important role in stimulating entrepreneurial activities in South Mediterranean countries, where entrepreneurs often grapple with financial constraints and struggle to access adequate capital to start or scale their ventures. Stated differently, digital financial inclusion opens up hitherto unheard-of prospects to bolster individuals' incentive to become entrepreneurs. More specifically, the results provide irrefutable evidence that a mere 1% increase in the digital financial inclusion index has the potential to generate a 5.79% improvement in entrepreneurship in South Mediterranean countries. More interestingly, such estimates could prove substantially important to policymakers and stakeholders as they clearly show where policy actions to instigate South Mediterranean countries' entrepreneurial activities are most likely to bear fruit.

By the same token, the results gleaned disclosed that entrepreneurship can relentlessly thrive in an environment that guarantees sufficient economic freedom. Stated more lucidly, entrepreneurs can reap maximum benefits the digital financial inclusion bestows upon them under the banner of economic freedom.

6. Implications & Recommendations

We have, accordingly, come up with a range of implications and practical recommendations, which will be delineated below.

1. Expand Inclusive Digital Financial Infrastructure

Decision-makers in the Southern Mediterranean region, which is plainly hallmarked by being full of highly rewarding entrepreneurial opportunities, ought to pour far more efforts into their attempts to promote inclusive digital finance in a way that caters to the various needs of those wishing to engage in entrepreneurial projects. One way of accomplishing this is through improving the digital financial infrastructure via greater investment in areas, such as fiber optics and base stations, in addition to enhancing both Internet coverage and access and improving the quality and availability of Internet services in various regions, especially rural and remote ones. It is also incumbent upon them to ensure that low-income people have uninterrupted access to mobile phone services and Internet services at affordable prices.

2. Invest in Digital Literacy and Entrepreneurial Skills

If they truly aspire to attain a more fulfilling exploitation of digital financial inclusion in the field of entrepreneurship, governments and financial institutions alike are called upon to pay far more attention to eradicate digital illiteracy and spread digital financial literacy among low-income groups, especially in rural, remote, and economically backward areas. They should, likewise, work strenuously to lower the education and skill thresholds required to use new technologies, empowering those vulnerable groups to learn more about digital finance and take full advantage of the various benefits provided by digital financial inclusion.

For the sake of more effective upshots, governments can rely upon issuing brochures, launching digital skills and entrepreneurship training programs, inviting highly qualified financial practitioners to give lectures, as well as drawing on the countless merits of social media platforms. The role of local educational institutions, NGOs, or communities cannot be overstated; they can collaborate to provide educational and training programs that help residents better understand and use digital financial tools more often, promoting thereby digital financial literacy. These programs can shed light upon how to use digital wallets more professionally and how to draw maximum benefits out of the online banking services provided by Mint, Neosurf, Weibo, and Alipay.

Strengthen Consumer Protection and Trust in Digital Finance

People's trust in digital financial technologies can be significantly boosted through continuous collaboration with stakeholders, such as financial institutions, FinTech companies, telecommunications companies, and regulatory bodies. This can ensure full protection of their personal data and privacy, paving the way for greater digital financial inclusion.

Promote Innovation in Digital Financial Solutions for Entrepreneurs

Governments should also put great efforts into removing all daunting barriers that can stand in the way of people accessing financial markets. They ought to stimulate research and development in financial institutions and invigorate the latter to stir up innovations in digital financial inclusion services, especially innovations targeting rural markets. These institutions should be cheered to design digital finance solutions that are well aligned with the various entrepreneurship development phases.

Create an Enabling Business Environment for Start-Ups

It is incalculably important to lay sufficient emphasis upon the need to adopt policies that encourage start-ups, such as facilitating company registration procedures, reducing the associated costs, cutting down bureaucracy, battling corruption, developing the legislative environment, unleashing economic freedom, and improving the business climate in general. Similarly, government officials should develop properly updated schemes targeting the development of the digital economy. Copying the experiences of other countries with different contextual factors, dissimilar regulatory environments, and utterly unlike capabilities should be wholly avoided since it is prone to have a range of potentially calamitous repercussions.

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FEMISE, the Forum Euroméditerranéen des Instituts de Sciences Économiques, is a Euro-Mediterranean network of over 100 economic and social research institutes from both shores of the Mediterranean. Established in Marseille, France, in 2005 as an NGO, FEMISE promotes dialogue on economic and social policies to foster cooperation and mutual benefit between Europe and its Mediterranean partners. Coordinated by the Economic Research Forum (ERF) in Egypt, FEMISE focuses on strengthening research capacity, fostering public-private dialogue, disseminating research findings, and building partnerships to support regional collaboration and sustainable development.

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