Asian Journal of Empirical Research
Volume 11, Issue 2 (2021): 11-22

http://www.aessweb.com/journals/5004

FINANCIAL DEVELOPMENT, INSTITUTIONS, GENDER AND ENTREPRENEURSHIP IN THE UNITED ARAB EMIRATES

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Article History
Received: 12 January 2021
Revised: 16 June 2021
Accepted: 20 July 2021
Published: 9 September 2021

Keywords
Financial development
Institutions
Enterpreneruship
UAE.

JEL Classification
G10; L26; F63; N25.

ABSTRACT
The paper explores the role of financial development on entrepreneurship in the United Arab Emirates by using data on new business registration and new business density over the period 2006-2018. The country is undergoing a rapid transformation phase characterizzed by substantial efforts to boost private sector entepreneurship. The data is drawn from the World Bank's World Development Indicators. We use the International Monetary Fund's composite financial development index to capture financial development in the country. The index comprises information on financial depth, access and efficiency by both financial institutions and markets. The paper controls for the impact on the macroeconomic conditions, institutional factors, such as gender equality and the fear of failure, the innovation environment and the business startup environment. The results show that financial development is a robust predictor of entepreneurial activity in the UAE. Macroeconomic, institutional and innovation conditions further mediate the link in more or less significant ways.

Contribution/Originality: The study contributes to the existing literature using previously unexplored measures of financial development to assess its impact on enterpreneurship after controlling for the mitigating role of various economic and institutional factors and accounting for endogeneity.

DOI: 10.18488/journal.1007.2021.112.11.22
ISSN(P): 2306-983X/ ISSN(E): 2224-4425
How to cite: Afra Hameli --- Ilias Kampouris --- Amal Kamal Machaal --- Charilaos Mertzanis (2021) Financial Development, Institutions, Gender and Entrepreneurship in the United Arab Emirates. *Asian Journal of Empirical Research*, 11(2), 11-22. 10.18488/journal.1007.2021.112.11.22

1. INTRODUCTION
The role of the financial sector in economic development has been a highly debated issue. Many years ago, Schumpeter (1934) stressed the significance of the financial sector in promoting structural transformation and entrepreneurial activity. Later, Patrick (1966) contended that the nature of the connection between the monetary framework and financial development affects the supply side of the economy. The ensuing financial development hypothesis argues that domestic financial factors can explain the expanding rate of return of real assets (Ozsahin & Kar, 2016) and thereby affect entrepreneurial activity. Several studies explored the link in more detail (Bianchi, 2010; Carree & Thurik, 2002; Reynolds, Hay, Bygrave, Camp, & Autio, 2000; The Global Entrepreneurship Monitor, 2002; The OECD, 2011). Moreover, entrepreneurship is also related to a combination of other determinants, such as education levels, business climate, and legal and political conditions (Grilo & Thurik, 2005; Grilo & Irigoyen, 2006; Hwang & Powell, 2005). These institutional factors can explain both the entrepreneurship rates and the disparities in entrepreneurial activities among countries and regions (Bowen & De Clercq, 2008).

This paper analyses the link between financial development, institutions, and entrepreneurial activity in the United Arab Emirates (UAE, henceforth). Promoting entrepreneurial activity is a key policy issue for the country (El-Sokari, Van Horne, Huang, & Al Awad, 2014). Shifts in population demographics, technological change,

fluctuating market conditions and geopolitical forces have transformed the country tremendously, raising new challenges and opportunities. The UAE has arrived at a critical juncture of its current economic development. The future competitiveness of its economy will largely rest on the transformation of its domestic industry and the enhancement of entrepreneurship. Considerable effort is expended during the recent years to encourage private sector entrepreneurship. The UAE offers several choices and advantages for new business registration. These include 45 free zones, 100% foreign corporate ownership, no corporate taxes, no import and export duties, 100% repatriation of revenues and profits, reduced documentation and smoother recruitment and longer visa processes for entrepreneurs and employees. Over the last few years, the UAE has also hosted 17 accelerator programs, 12 incubators and 7 co-working spaces (MAGNiTT, 2020). As a result new business registration has seen a staggering growth: the Dubai Chamber of Commerce has seen its small and medium enterprise (SME) members growing from about 450 in 1965 to about 210,000 members today, contributing to the about 40 percent of GDP. However, the local ecosystem could flourish further by creating an environment where it is cost-effective for establishing a startup, but also failing a startup, and yet still incentivized to establish it again. Currently this is not the case. The high costs to incorporation and bureaucracy surrounding licensing, visa and real estate requirements inhibits growth for UAE-based startups. It is especially important when looking at the challenges of financing, talent acquisition and scalability.

While the country has taken considerable steps to improve the ease of doing business and strengthen its appeal as a preferred business hub, access to finance still remains an area of challenge for startups and SMEs (Al Zaabi, 2020). Another challenge is that newlly registered companies need to not only survive and grow but also become more extroverted (Gokhale, 2020). A big challenge for startups in the UAE is figuring out a strategy on how to scale and grow their businesses exponentially. Some of the largest emerging and frontier market financial centers are within only a few hours flying time from the UAE, and these markets should be on the minds of all founders starting businesses in the UAE. Moreover, bureaucracy and legal frameworks have prevented the growth of the angel investor community (MAGNiTT, 2020). There is a need for further incentivizing angel investors in the UAE to assume entrepreneurial risk through similar models to those found in the UK and the EU, which provide capital guarantees and in-kind benefits for their investments. At the absence of a strong angel investor community, venture capitalist firms across the region have undertaken most of the responsibility of financing the startup ecosystem to date for all stages of entrepreneurial development. An associated challenge is that venture capitalists need to proceed with large exits from their investee ventures to realize returns. Strong financial development in the country would facilitate venture capital exit and subsequent entry of long-term investors from larger institutions domestically and abroad. However, this situation is gradually improving as financial institutions improve their understanding of the startup up business model, which requires long-term high-risk investment. The funding landscape for startups, especially those in the digital space, has been changing rapidly in the region. The Middle East and North Africa attracted $650 million of startup support funding in 2017, with 76% of it going to the UAE-based firms (MAGNiTT, 2020). The State of Digital Investments in the MENA 2013-2017 report noted that the UAE continued to be the leader in attracting digital startups across the region, both in terms of number of investors and deals: it accounted for about one-third (32%) of all MENA investors. Together with Saudi Arabia, Lebanon, and Egypt, it also contributed to 70% of all investments in digital startups in the region in 2017. Thus, financial development is a core element of any successful effort to maintain and consolidate entrepreneurial success in the country.

This paper focuses specifically on exploring the role of financial development in promoting entrepreneurial activity in the country. It uses data from the World Bank and analyzes the effect of a novel International Monetary Fund (IMF) measure of financial development on new business registrations and new business density during the 2006-2018 period. It further considers the mitigating role of other economic factors and institutions. The novelty of the paper is that it uses previously unexplored measures of entrepreneurial activity and financial development and it controls for the impact of various economic and institutional factors that mediate the link between financial development and entrepreneurial activity, such as gender equality and the fear of entrepreneurial failure as well as the innovation environment and the institutional governance environment. The results show that financial development is associated with entrepreneurial activity. Several economic and institutional factors mediate this link. In what follows, section 2 analyses the relevant literature, section 3 describes the data and the methodology of the analysis, section4 analyses he results and section 5 concludes the paper.

2. RELATED LITERATURE

Several studies highlight that entrepreneurship is not merely a static activity involving an element of creation but also a dynamic activity requiring procedural adaptation. An entrepreneur is the person who recognizes and assesses new business opportunities by meeting the challenges posed by introducing new products (Fogel, Hawk, Morck, & Yeung, 2006). The procedure of business enterprise comprises four particular stages. These are the recognition and assessment of the opportunity, the foundation of the strategy to exploit it, the assurance of the needed assets to bring it to life, and the resulting enterprise (Hisrich, Peters, & Shepherd, 2005).

Schumpeter (1934) emphasized the idea of innovativeness and contended that everyone is an entrepreneur when s/he actually carries out new product and process combinations. The outflow of "new combinations" suggests finding new methods to produce goods and services that satisfy the people's present needs or making new products using new technology and design (The UNCTAD, 2004; Thurik & Wennekers, 2001). Schumpeter sees innovation, which is the key element of entrepreneurship, as the primary result of financial improvement. Kirzner (1997) places emphasis on identifying profit-making opportunities, which he considers as an essential element in his interpretation of the entrepreneur. Knight (1971) characterized the entrepreneur as a person, who is equipped to making profits by

going out on a limb in uncertain business situations (Carree & Thurik, 2002; The UNCTAD, 2004). To put it simply, entrepreneurs search for and recognize opportunities for economically beneficial businesses as well as engage in the risk to exploit those opportunities (The OECD, 1998). Subsequently, it would not be false to contend that recognizing and picking the correct business openings among a few different choices is the primary component of fruitful business visionaries. Following the directions provided by Schumpeter (1934), Kirzner (1997) and Knight (1971), Carree and Thurik (2002) analyze the determinants of business enterprise in a modern setting. From a practical perspective, The Global Entrepreneurship Monitor (2002) shows that 66% of the dynamic business visionaries do business openings willfully, whilst the remaining 33% engage in entrepreneurial exercises in view of the absence of other professional opportunities. The first group, referred to as opportunity-driven business visionaries, is generally found in economically developed nations, whilst the second group, known as necessity driven business people, makes up half of business visionaries in the emerging countries (The Global Entrepreneurship Monitor, 2002).

Numerous policymakers and researchers contend that business enterprise is critical for economic progress and social welfare. Entrepreneurs do not only create new business outcomes but also facilitate the structural transformation in the economy. Given the way that business enterprise builds rivalry in the market, it can likewise encourage financial development and national competitiveness. In what follows, we analyze the factors that, in accordance with the literature, seem to affect entrepreneurial activity. These include financial, economic and institutional factors.

Financial factors are critical determinants of entrepreneurship, especially during the initial period of business enterprise. Inadequate financial resources are important impediments to entrepreneurial initiative (Reynolds et al., 2000). The Global Entrepreneurship Monitor (2002) argues that 20% of business people mark the absence of financial resources as the primary obstacle in their journey for an enterprise. Financial frameworks are key contributing factors in the materialization of the most profitable projects among various businesses (King & Levine, 1993). The OECD (2011) and a join The OECD/EUROSTAT (2008) report highlighted the significance of access to finance and the sophistication of the financial framework in promoting entrepreneurship. Bianchi (2010) underscores the importance of credit openness in providing new opportunities for business enterprise. Klapper, Laeven, and Rajan (2004) and Baliamoune-Lutz, Brixiova, and Ndikumana (2011) show that the availability of commercial credit is a crucial factor for entering the market of entrepreneurial ideas and that the insufficient credit is the key cause of foregone entrepreneurial opportunities and dynamism. The OECD (2011) argues that blending investment opportunity, entrepreneurial orientation and financial resources is not by itself adequate in generating new enterprises unless opportunity cost and start-up expenses are lower than the potential cash-flow benefits of investment. The Global Entrepreneurship Monitor. (2002) likewise shows that entrepreneurial opportunity, entrepreneurial drive and access to financial resources are key factors of entrepreneurial activity. Several studies confirm these institutional views. Desai, Gompers, and Lerner (2003) and Klapper et al. (2004) argue that access to financial resources, along with market guidelines and financial opportunities, determine new business activity in the economy. Bastie, Cieply, and Cussy (2013); Bianchi (2010); King and Levine (1993); Reynolds et al. (2000) and The UNCTAD (2004) provide empirical evidence that access to financial resources and financial advancement are significant determinants of new business creation.

The economic conditions are also important in entrepreneurship. The Global Entrepreneurship Monitor (1999) also highlighted that the level of entrepreneurship differs considerably among countries. It argues that the institutional structures affecting new business activity often reflect diverse economic and financial conditions and their association with entrepreneurial engagement. Entrepreneurs need information on product demand and prices under a stable economic environment with a predictable inflation rate, so that they can take the right decisions on their investments. McMillan and Woodruff (2002) emphasize that macroeconomic uncertainty can limit entrepreneurship because of its negative impact on long-term contracts and market expectations. Reynolds et al. (2000) argue that tax incentives on individuals and organizations and stronger government support of private sector initiatives in the economy can improve entrepreneurship.

Institutional factors play an important role too. Baumol (1990) and North (1990) show that there is a connection between institutional factors and economic performance and contend that new business opportunities are affected by institutional factors and structures. Sobel (2008) argues that an institutional structure, which takes into account property rights, a reasonable legal framework, contract authorization and tax and other government requirements, empowers business enterprise and financial improvement. The OECD (1998) shows that social structures, trust among people and the individuals' ability for active engagement, affect enterprise activity. Klapper et al. (2004) show that business entry laws have no strong effect on new business creation in countries with high levels of corruption, whilst they exert a significant effect on entrepreneurship in countries with lower levels of corruption. Blackburn and Sarmah (2006) contend that both social customs and corruption negatively influence new business creation.

An especially important institutional factor that encourages entrepreneurship is gender equality. Revenga and Sudhir (2012) argue that, although women represent about half of the world population, they have fewer opportunities to make decisions and control their lives. Verheul, Van Stel, and Thurik (2004) argue that countries with high total entrepreneurial activity rates are also associated with high female entrepreneurial activity rates. Nedelcheva (2012) note that the number of female entrepreneurs across the world has been gradually growing in the recent years and therefore researchers and policy makers have been paying more attention to female entrepreneurship. However, Sarfaraz, Mian, and Karadeniz (2013) note that, despite the efforts by international donor organizations (e.g., the United Nations and the World Bank) to bridge the gender gap in accessing business opportunities, gender inequalities are still widely prevalent and women are deprived of having equal rights with men.

This implies ignoring and underestimating a huge potential human resource. Women entrepreneurs can play crucial roles in the process of economic development if they have equal opportunity and access to resources and bring their business ideas to fruition. Minniti and Arenius (2003) argue that, despite of the growing number of female entrepreneurs, the share of female entrepreneurship is still significantly low compared to their overall participation rate. Sarfaraz et al. (2013) note that especially in less developed countries with high female unemployment rates, for some women who need to work at home entrepreneurship can be a practical solution to earn income and reduce their unemployment rate and poverty. Baughn, Chua, and Neupert (2006) document that gender equality in the law is expected to increase the support for female entrepreneurship. Entrepreneurship often gives women the flexibility to handle their domestic responsibilities at home, while also providing financial support for their family (Bertaux & Crable, 2007). Women's entrepreneurship has been known as an important unexploited source of economic growth in the last decade (Georgeta, 2012).

Demographic factors are important too. The Global Entrepreneurship Monitor (1999) argues that, in addition to financial, economic and institutional factors, the employment to population ratio and changes in the size and composition of population are also important factors in encouraging individuals to be entrepreneurs. For example, the population of 25-44 years old is known to be the most dynamic group of entrepreneurs (Reynolds et al., 2000). Increases in the size of population offers more businesses opportunities that will encourage entrepreneurs because of the increase in demand for goods and services. The Global Entrepreneurship Monitor (2002) report finds that male entrepreneurs are broadly twice as many as women entrepreneurs and most fall into the 25-44 years old age. The Global Entrepreneurship Monitor (1999) report also highlights the fact that the education level is strongly associated with entrepreneurial activity (Reynolds et al., 2000).

In the analysis that follows, we explore the empirical association between financial development and entrepreneurial activity in the UAE. We also consider the controlling impact of economic, financial and institutional factors.

3. DATA AND METHODOLOGY

We obtain the data on new entrepreneurial activity in the United Arab Emirates from the World Bank's World Development Indicators. Our sample size includes annual data for the 2006-2018 period. We use two outcome variables. The first is the number of new business registrations (NEWBUSREG). These refer to the number of new limited liability companies registered for the first time in the calendar year. The second outcome variable is the extent of new business density (NEWBUSDENS). This refers to the number of new business registrations per 1,000 people of ages 15-64. Both outcome variables are measured and reported by the World Bank on an annual basis. Table 1 shows the summary statistics of the two outcome variables. The number of new business registration has increased from 10,434 in 2006 to 24,716 in 2018 with an average of 7.12 percent change over the 2006-2018 period. The rate of new business density has increased from 19.6% in 2006 to 30.49% in 2018 with an average of 4.02 percent change over 2006-2018 period. Overall, 208,459 new business were registered in the country during the 2006-2018 period with an average of 16,035 new business per year. These trends show that the number of new business registration and the new business density have on average been increasing during this period, thereby documenting a rise in the country's entrepreneurial spirit.

Table- 1. Trends in new business registration and density in the UAE, 2006-2018.

Year	New business registrations		New business density (registrations per 1000 people)	
	Number	Percent annual change	Density rate	Percent annual change
2006	10434	-	19.60	-
2007	11971	14.73%	18.55	-5.36%
2008	9510	-20.56%	17.61	-5.07%
2009	8371	-11.98%	16.06	-8.80%
2010	10288	22.90%	16.41	2.18%
2011	14753	43.40%	19.03	15.97%
2012	16469	11.63%	20.33	6.83%
2013	18711	13.61%	22.38	10.08%
2014	21814	16.58%	24.73	10.50%
2015	20153	-7.61%	27.70	12.01%
2016	20597	2.20%	29.69	7.18%
2017	20672	0.36%	30.12	1.45%
2018	24716	0.20%	30.49	1.22%
Average	16,035	7.12%	22.52	4.02%
Total	208,459			

Source: World Development Indicators, World Bank.

In order to analyze the impact of financial development on the annual variation of the two outcome variables, we use the IMF's Financial Development Index (FDI) as our main independent variable (Svirydzenka, 2016). The FDI is a combination of factors that comprise financial depth (size and liquidity of markets), financial access (ability of individuals and companies to access financial services), and financial efficiency (ability of financial institutions to

provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets). It includes information from the World Bank's Global Financial Development Database (GFDD) with additional data from the Bank of International Settlements (BIS) debt securities database, the Dealogic corporate debt database, and the IMF Financial Access Survey. It summarizes and aggregates this diverse information into a few easy-to-use sub-indices and a general index. Thus, the FDI includes a broad measure of financial development, which captures more fully the various functions of finance, such as its ability to facilitate risk management, exert corporate control, pool savings, allocate capital to productive investment, and facilitate exchange of goods.

In addition, we control for the impact of other economic and institutional conditions, which may affect directly or indirectly the extent and direction of the impact of financial development on entrepreneurial activity as captured by our two outcome variables. The preceding literature provides the relevant background for these controls (see also García-Ruiz and Toninelli (2010)). More specifically, taking account the country's particular context, we include the women's empowerment index (WBL) that captures the extent of gender equality against the law; the degree of economic development approximated by the value of GDP per capita (GDPCAP); the extent of credit provided by the banking system to the state-own enterprises (percent of GDP) (CREDITSOE); the tax rate on profits (TAX); the inflation rate (INFLATION); the percent of national income coming from oil revenue (ENERGRENT); and the size of foreign direct investment (percent of GDP) in the country (FDINV). Moreover, we include further economic and institutional controls, which we describe later in the text. The Appendix provides detailed information of all variables.

Table 2 shows the summary statistics of all variables included in our analysis. The average number of new business registration per 1000 people over the 2006-2018 period was 9.58 new business with a standard deviation of 35% and a median value of 9.65 new business registered. The average number of new business density per 1000 people over the 2006-2018 period was 3.06 business and a median value of almost 3 new business. The average value of the FDI index is 0.48 with a standard deviation of 0.05 and a median value of 0.49 indicating a rather slow financial transformation process.

Table-2. Summary Statistics.

Variable	Mean	S.D.	Min	0.25%	Median	0.75%	Max
NEWBUSDENS	3.06	0.22	2.78	2.89	2.99	3.26	3.41
NEWBUSREG	9.58	0.35	9.03	9.25	9.65	9.92	9.99
FDI	0.48	0.05	0.41	0.44	0.49	0.50	0.56
WBL	27.26	0.39	26.90	27.01	27.08	27.50	28.01
GDPCAP	11.03	0.34	10.46	10.78	11.02	11.28	11.64
CREDITSOE	11.01	8.94	2.08	5.65	7.2	12.59	35.23
TAX	14.68	0.63	14.1	14.25	14.4	14.85	15.9
INFLATION	3.41	4.01	0.66	0.88	1.62	4.07	12.25
ENERGRENT	21.26	7.69	9.04	15.81	19.75	25.16	51.34
FDINV	1.28	1.89	1.17	0.11	0.41	2.5	6.77
BUSOPP	43.93	11.92	25.72	31.12	51.28	53.94	55.33
BUSSKILL	59.12	6.13	45.98	55.23	59.5	63.97	67.91
BUSINFO	16.44	5.05	9.72	14.23	15	18.14	29.57
PATENTS	20.29	5.25	15	16	18	26	29
TRADEMARKS	13.8	84.96	12.67	12.5	13.87	13.16	14.99
HIGHTECHEXP	2.54	2.2	0.03	1.06	2.44	3.67	8.46
STARTBUSS	78.86	10.42	63.9	68.31	83.72	88.49	91.21
PAIDINCAP	78.94	25.68	39.98	54.71	100	100	100
CONTRCOR	0.9	0.39	-0.01	0.89	1.06	1.15	1.28
BRANCH	12.48	0.28	12.06	12.29	12.44	12.69	12.91

Source: World Development Indicators, World Bank.

In order to estimate the impact of financial development on entrepreneurial activity we use a pooled OLS estimation model. On the one hand, the OLS method has the disadvantage that its linear estimation may result in predicted values for the outcome variable that are biased upwards. However, it has the advantage of maintaining simplicity and comparability (Angrist & Pischke, 2009). The disturbance parameter is assumed to follow a normal distribution. We consider only observations with non-missing values. We measure the key outcome and independent variables in logarithms to capture non-linearities. We include year effects to capture the influence of external time-varying factors. In general, our baseline estimation model assumes that the entrepreneurial activity is described by the following equation:

$$NEWBUS_i = \alpha + FDI_i\,\beta_1 + X_i'\,\beta_2 + \varepsilon_i$$

where $NEWBUS_i$ is, alternatively, the new business registrations (NEWBUSREG) or the new business density (NEWBUSDENS) in year i in the UAE. The key independent variable FDI_i is the level of domestic credit provided by the financial sector to the private economic sector (as a percent of GDP) in year i. X_i is the vector of country-level control variables in year i; and ε_i is a disturbance parameter assumed to follow the normal distribution. In order to

keep the analysis simple, we do not consider interaction effects. We calculate the F statistic to measure the overall fit of the model and the significance of the year effects. The goodness of fit of the regression is measured by the adjusted R^2 statistic. Table 3 presents the pairwise correlations between the basic control in the regression. The correlations and the VIF value do not show severe collinearity among them and therefore they can all be included in the regression analysis.

Table-3. Correlation Matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FDI (1)	1.00							
WBL (2)	0.14	1.00						
GDPCAP (3)	0.06	0.09	1.00					
CREDITSOE (4)	0.23	0.42***	-0.21	1.00				
TAX (5)	0.32	0.42***	0.25	0.35***	1.00			
INFLATION (6)	0.14	-0.37	0.46***	-0.33**	-0.23	1.00		
ENERGRENT (7)	-0.33	-0.34***	-0.06	-0.34***	-0.37**	0.26	1.00	
FDINV (8)	-0.33	-0.16	0.41***	-0.34	-0.05	0.39*	0.19	1.00
VIF	2.03							
N	13							

Note: The table reports the pairwise correlations between the independent variables in the baseline model. It also provides the VIF mean value. VIF values above 4 indicate collinearity.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4. ANALYSIS OF THE RESULTS

4.1. Baseline Results

The regression results report the estimated effect of a change in FDI on each of the two outcome variables NEWBUSREG and NEWBUSDENS. We consider separately the impact of FDI alone and jointly with other macroeconomic variables. Table 4 reports the results of the macroeconomic effects. In the single impact models (1) and (2), the impact of FDI is positive and significant. The higher the level of financial development in the economy, the higher the new business density and the higher the number of new business registration. The magnitude of the effect is considerable: the marginal effects of a unit change in financial development in the country are 38.4% for new business registration and 33.6% for new business density. This implies that the hypothesis in the literature review that higher financial development encourages entrepreneurial activity is confirmed for the UAE. The R^2 is low but this is reasonable given that only one regressor is considered. In the models (3) and (4), which include additional macroeconomic variables, the results show that the impact of FDI remains positive and significant. The effects become 10.2% and 20.9%, respectively, indicating a lower magnitude. The women's empowerment index (WBL) exerts a strong positive effect on new business registration as well as new business density. It seems that a higher level of gender equality in the law is associated with a stronger incentive to setup new business. This result confirms most of the evidence in other countries. Further, the results show that the other macroeconomic variables are significant in most cases. Indeed, economic development (GDPCAP) is significant and positive, which shows that higher economic development encourages new business density, but it does not affect new business registration. The higher economic development is, the more entrepreneurial activity is concentrated in areas with high business density. The level of credit to state-owned enterprises is also positive and significant determinants of new business density and registration. Financial support of state-owned enterprises seems to encourage entrepreneurial activity. This is perhaps because many government-supported state-owned enterprises expand with new subsidiary companies and get involved in establishing a large number of join partnerships with the private sector. The profit tax rate exerts a significant and negative impact on new business density and registration. Higher tax on profits seems to discourage entrepreneurial activity. Inflation does not appear to affect new business density and registration alike. On the other hand, higher level of revenue from energy export affects positively new business density but not new business registration. Finally, foreign direct investment does not seem to affect both new business density and registration. Overall, when other macroeconomic variables are included in the analysis, the R^2 improves dramatically and the goodness of fit of the regression is much higher. The F test shows that the year fixed effects are significant and slightly stronger in the new business registration.

4.2. Endogeneity Analysis

Despite the inclusion of year effects, the pooled OLS estimates may not produce unbiased assessments of the role of financial development on new business registration because of the possible presence of time-varying factors affecting financial development and new business registration simultaneously. For example, it is possible that in recent years the country will have experienced improving entrepreneurial conditions but also invested more in financial infrastructure (e.g. financial payment infrastructure, etc.) during the period, which improved the country's overall financial development, thereby encouraging entrepreneurial initiative. These deliberations mean that the covariance term $COV(FDI_{jt}, \varepsilon_{jt})$ in equation (1) is non-zero, because even if it is conditional on the fixed effects, FDI might be endogenous to entrepreneurial activity considerations. For this reason, we will use instrumental variables (IV) estimates to further check the robustness of our estimates. For comparison purposes, we apply a pooled OLS estimation with fixed effects (FE), an IV method that deploys the 2SLS estimator and an IV method that deploys the two-step GMM estimator.

Table-4. Baseline models.

	New business density (1)	New business registration (2)	New business density (3)	New business registration (4)
FDI	0.384*	0.336*	0.102**	0.209**
	(0.178)	(0.105)	(0.127)	(0.106)
WBL			0.562**	0.129*
			(0.232)	(0.4558)
GDPCAP			1.601**	2.074
			(0.384)	(1.248)
CREDITSOE			0.056***	0.093***
			(0.003)	(0.011)
TAX			-0.217**	-0.426*
			(0.047)	(0.158)
INFLATION			0.005	-0.002
			(0.006)	(0.020)
ENERGRENT			0.025**	0.038
			(0.007)	(0.022)
FDINV			0.008	0.011
			(0.007)	(0.022)
Year effects	Yes	Yes	Yes	Yes
F-test	25.452	26.788	87.345	89.034
Adj R^2	0.193	0.129	0.996	0.976
N	12	12	11	11

Notes. The table reports the baseline results. We use an OLS estimation model with year effects. Heteroscedasticity-robust standard errors are presented in parentheses. The outcome variables are new business density (NEWBUSDENS) and new business registration (NEWBUSREG). The key independent variable is the financial development index (FDI). Control variables include the women's empowerment index (WBL), economic development (GDPCAP), credit to state-won enterprise (%GDP) (CREDITSOE), the tax rate of profits (TAX), the inflation rate (INFLATION), the percent of national income from oil revenue (ENERGRENT) and the size of foreign direct investment (%GDP) (FDINV). The pool period is 2006-2018. The symbols *, **, *** correspond to $p < 0.1$, $p < 0.05$, $p < 0.01$, respectively. The Appendix provides the definition of all variables.

Table-5. Endogeneity analysis.

	IV-2SLS		IV-GMM	
	New business density (1)	New business registration (2)	New business density (3)	New business registration (4)
FDI	0.213**	0.473**	0.213**	0.473**
	(0.106)	(0.187)	(0.106)	(0.187)
WBL	2.999*	0.482*	2.999*	0.482*
	(1.554)	(0.329)	(1.554)	(0.329)
GDPCAP	2.999*	0.482	2.988*	0.488
	(1.554)	(0.329)	(1.554)	(0.329)
CREDITSOE	0.004	0.039**	0.004	0.039**
	(0.007)	(0.018)	(0.007)	(0.018)
TAX	-0.233**	-0.126	-0.233**	-0.126
	(0.098)	(0.092)	(0.098)	(0.092)
INFLATION	0.052*	0.004	0.052*	0.004
	(0.028)	(0.006)	(0.028)	(0.006)
ENERGRENT	0.030***	0.002	0.033***	0.005
	(0.007)	(0.010)	(0.007)	(0.010)
FDINV	0.016	-0.019	0.016	-0.019
	(0.043)	(0.016)	(0.043)	(0.016)
F-stat	16.812	30.990	16.812	30.990
Anderson-Rubin stat (p-v)	2.957 (0.161)	2.957 (0.162)	2.957 (0.87)	2.957 (0.89)
Endogeneity stat (p-v)	2.929 (0.87)	0.671 (0.413)	2.929 (0.087)	0.671 (0.414)
Hansen J (p-v)	0.000 (0.045)	0.000 (0.049)	0.000 (0.045)	0.000 (0.050)
N	12	12	12	12

Notes. The outcome variables are new business density (NEWBUSDENS) and new business registration (NEWBUSREG). The key independent variable is the financial development index (FDI). Model (1) uses an IV analysis with the 2SLS estimator for NEWBUSDENS. Model (2) uses an IV analysis with the 2SLS estimator for NEWBUSREG. Model (3) uses an IV analysis with the two-step GMM estimator for NEWBUSDENS. Model (4) uses an IV analysis with the two-step GMM 2SLS estimator for NEWBUSREG. The external instrument used in the IV methods is the number of bank branches per 1000 people (BRANCH) in the country. The test for model underidentification is the Anderson-Rubin statistic. The test for the endogeneity of the individual outcome variables is the Endog statistic. The test for overidentifying restrictions is the Hansen J statisitc. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The latter uses the first difference transformation treating the lag values of the outcome variables as internal instruments for the lagged outcome variable thereby producing more consistent and unbiased estimates. We use the number of bank branches per 1000 people in the country as the excluded instrument in the IV analysis (BRANCH). The variable correlates highly with FDI (0.456) and less with NEWBUSDENS (0.087) and NEWBUSREG (0.097). It is also economically justified. The higher the number of bank branches per 1000 people, the higher the possibility that overall money expansion will be channeled in the economy thereby affecting the impact of FDI. Table 5 presents the results from using the IV estimation methods. The results document that the estimates of FDI in predicting NEWBUSDENS and NEWBUSREG remain positive and significant, albeit at a lower value. The remaining economic and institutional controls remain also significant. The F statistic shows that the model's regressors are jointly significant, and the Anderson-Rubin and Hansen J statistics show that our external instrument is relevant and valid.

4.3. Impact of the Fear of Entrepreneurial Failure Conditions

The regression results report the estimated effect of a change in FDI on each of the two outcome variables NEWBUSREG and NEWBUSDENS after we control for the effect of the fear of entrepreneurial failure. In entrepreneurship, the fear of failure has been identified as a significant barrier to entrepreneurial activity. Fear of failure is defined as having doubts regarding the success of a particular project, where lack of confidence in abilities can be a major reason of this fear (Cacciotti & Hayton, 2014). Most of the time, this fear is a psychological result of past events and failures a person went through and could grow as this person matures. The Global Entrepreneurship Monitor, the world's largest study of entrepreneurial activity, identifies the fear of failure as a strong inhibitor of seizing business opportunities and transforming entrepreneurial intentions into entrepreneurial actions. Contrary to entrepreneurship research, psychological theory offers a counterintuitive prediction of the outcomes of the fear of failure. While early achievement theories argued that fear of failure inhibits entrepreneurial behavior, later psychological research has found that the fear of failure sometimes motivates individuals to act while at other times inhibits such action. Although there is no unified theory on the role of the fear of failure within the psychology literature, the theoretical background of this construct in entrepreneurship appears even more important. We use three proxies to capture the fear of failure effect, which include the following: (a) the percentage of aged 18-64 population perceiving good opportunities to start a business (BUSOPP); (b) the percentage of aged 18-64 population who believe they have the required skills and knowledge to start a business (BUSSKILL); and (c) the percentage of people involved in entrepreneurial activity in the business services sector information (BUSINFO). Table 6 reports the results after accounting for the effect of three measures capturing the fear of failure in the country. The results show that the impact of FDI is positive and very significant. However, after accounting for the fear of failure, its impact on NEWBUSREG and NEWBUSDENS is considerably higher, 39.3% and 87.1% respectively. In other words, the higher the control of the fear of entrepreneurial failure, the higher the positive effect of financial development on entrepreneurial activity in the country. In addition, BUSOPP as well as BUSINFO are significant and affect NEWBUSREG and NEWBUSDENS. The results clearly state that having more opportunities and information will help entrepreneurs control their fear of failure that will result in higher entrepreneurial activity. Further, BUSSKILL is negative but also significant affecting both NEWBUSREG and NEWBUSDENS. This shows that the fear of entrepreneurial skill inadequacy or the psychology of human incapacity will adversely affect the number of people registering for new business and the density rate of new businesses as well. As shown also that the value of R^2 is high which explains how the variables have the effect on both NEWBUSREG and NEWBUSDENS through FDI.

Table-6. Impact of the fear of entrepreneurial failure.

	New business density	New business registration
FDI	0.871***	0.393*
	(0.149)	(0.228)
BUSOPP	0.006*	0.025***
	(0.003)	(0.004)
BUSSKILL	-0.026***	-0.013*
	(0.004)	(0.006)
BUSINFO	0.015**	0.018***
	(0.004)	(0.004)
Basic controls	Yes	Yes
Year effects	Yes	Yes
F-test	58.677	59.544
Adj R^2	0.933	0.933
N	11	11

Notes: The table reports the baseline results after controlling for the impact of fear of entrepreneurial failure. Heteroscedasticity-robust standard errors are presented in parentheses. The outcome variables are new business density (NEWBUSDENS) and new business registration (NEWBUSREG). The key independent variable is the financial development index (FDI). Control variables include the basic controls as well as the percentage of adult population perceiving good opportunities to start a business (BUSOPP), the percentage of adult population who believe they have the required skills and knowledge (BUSSKILL) and the percentage of those involved in entrepreneurial activity in the business services sector information (BUSINFO). The pool period is 2006-2018. We use an OLS estimation model with year effects. The symbols *, **, *** correspond to $p < 0.1$, $p < 0.05$, $p < 0.01$, respectively. The Appendix provides the definition of all variables.

4.4. Impact of the Innovation Environment

The regression results now report the estimated effect of a change in FDI on each of the two outcome variables NEWBUSREG and NEWBUSDENS after we control the impact of the innovation environment. Technological innovation, which involves the development of new, more effective or efficient processes and new products, is responsible for much of the productivity growth that enables improving prosperity. Starting a new business venture is an important way for technological innovation to enter the economy and raise overall productivity. This further enhances technological innovation and new business startups. Previous studies showed that innovation has a direct relationship with long-term success where entrepreneurs are able to develop many new ideas (Brooks, 2013). Hinai (2019) notes that the UAE was ranked highly in the Global Innovation Index and that the country's long-term mission is to become one of the top innovation leaders around the world. The UAE has therefore strived to improve the innovation environment for entrepreneurs to start their businesses in the country while easing the licensing process. We use three proxies to capture the innovation environment, which include the following: (a) the number of patent applications (PATENTS); (b) the number of trademarks applications (TRADEMARKS); and (c) the value of high technology exports (% of manufactured exports) (HIGHTECHEXP). Table 7 reports the results after accounting for the effect of technological innovation in the country. The results show that the effect of the FDI remains positive and significant. The impact is higher on NEWBUSREG relative to NEWBUSDENS. The higher the number of licensed patents in the country, the higher the entrepreneurial activity, especially in terms of setting up new businesses. On the other hand, the number of registered trademarks does not appear to significantly influence entrepreneurial activity. Finally, higher values of high-tech exports are associated with higher entrepreneurial activity, both in terms of new business formation and higher density. The value of R^2 shows how the variables are highly relevant in explaining entrepreneurial activity.

4.5. Impact of the Regulatory Governance Environment

The regression results report the estimated effect of a change in FDI on each of the two outcome variables NEWBUSREG and NEWBUSDENS after we control for the impact of the regulatory governance environment. Public interest theory argues that government regulation is required to protect the public from market failures. Thus, the government should regulate new firms to ensure that they comply with minimum standards for providing goods and services. Such regulations reduce the direct harm to consumers from poor-quality products and the indirect harm to the public from negative externalities such as pollution. In contrast, the public choice theory points out that the government is not benevolent and regulation may in contrast lead to inefficient outcome. The UAE government has amended many laws to attract foreign entrepreneurs, including the provision of 100% ownership, full repatriation of profits, etc., which has sparked a new era of creativity in the country (Lawrence, Debusmann , & Hamdan, 2018). However, the UAE government maintains strict rules in order to avoid entrepreneurship failure by setting strict conditions for new business setup as well as with respect to bankruptcy law (Cherian & Writer, 2018). However, many of these strict conditions have been recently repelled. Further, another key governance issue is the extent of corruption in the country. Page and Vittori (2020) document a considerable incidence of corruption that needs to be addressed, prompting policy responses. We use three proxies to capture the regulatory governance environment, which include the following: (a) the extent to which it is easy to start a business (STARTBUSS); (b) the amount of paid-in minimum capital to start a business (% of income per capita) (PAIDINCAP); and (c) the extent of controlling corruption (CONTRCOR) in the country.

Table-7. Impact of the innovation environment.

	New business density	New business registration
FDI	0.126*	0.235*
	(0.124)	(0.087)
PATENTS	0.001	0.004*
	(0.003)	(0.125)
TRADEMARKS	-0.002	-0.002
	(0.002)	(0.002)
HIGHTECHEXP	0.001*	0.001**
	(0.002)	(0.002)
Basic controls	Yes	Yes
Year effects	Yes	Yes
F-test	65.449	67.322
Adj R^2	0.984	0.996
N	11	11

Notes: The table reports the baseline results after controlling for the effect of the innovation environment. Heteroscedasticity-robust standard errors are presented in parentheses. The outcome variables are new business density (NEWBUSDENS) and new business registration (NEWBUSREG). The key independent variable is the financial development index (FDI). Control variables include the basic controls as well as the number of patent applications (PATENTS), the number of trademark applications (TRADEMARKS) and the high-technology exports (% of manufactured exports) (HIGHTECHEXP). The pool period is 2006-2018. We use an OLS estimation model with year effects. The symbols *, **, *** correspond to $p < 0.1$, $p < 0.05$, $p < 0.01$, respectively. The Appendix provides the definition of all variables.

Table 8 reports the results after accounting for the effect of regulatory governance institutions in the country. The impact of financial development remains positive and significant. It is stronger in setting up new business. Accounting for the regulatory governance institutions improves the results. Increasing the institutional easiness of

setting up a business improves entrepreneurial activity, especially its concentration. On the other hand, changing the amount of minimum paid-up capital does not appear to affect entrepreneurial activity. Finally, stronger control of corruption is considerably associated with higher entrepreneurial activity. These results show that institutional governance improvements will considerably improve the incentive to setup new business and have it concentrated in certain areas. This is especially important for the region that currently employs many free zones to this end.

Table-8. Impact of the business startup environment.

	New business density	New business registration
FDI	0.432***	0.881***
	(0.095)	(0.232)
STARTBUSS	0.027*	0.047
	(0.014)	(0.027)
PAIDINCAP	-0.008	-0.007
	(0.005)	(0.010)
CONTRCOR	0.055***	0.047**
	(0.010)	(0.014)
Basic controls	Yes	Yes
Year effects	Yes	Yes
F-test	76.455	78.044
Adj R²	0.946	0.923
N	12	12

Notes: The table reports the baseline results after controlling for the business startup encouragement environment. Heteroscedasticity-robust standard errors are presented in parentheses. The outcome variables are new business density (NEWBUSDENS) and new business registration (NEWBUSREG). The key independent variable is the financial development index (FDI). Control variables include the basic controls as well as the starting of a business index (STARTBUSS), the paid-in minimum capital (percentage of income per capita) for starting a business (PAIDINCAP) and the extent of controlling corruption (CONTRCOR). The pool period is 2006-2018. We use an OLS estimation model with year effects. The symbols *, **, *** correspond to $p < 0.1$, $p < 0.05$, $p < 0.01$, respectively. The Appendix provides the definition of all variables.

5. CONCLUSION AND RECOMMENDATIONS

This paper examines the effects of the financial development and other economic and institutional conditions, such as gender equality, fear of failure and regulation, on the entrepreneurial activity in the UAE during the period 2006-2018. The UAE have witnessed a dramatic increase in their new business registration during this period by an average annual change of 7.75%. This analysis focused on two key outcome variables, which are the number of new business registration and the number of new business density per 1000 people. We use the IMF's composite financial development index (FDI) as the key measure of financial development in the country. The analysis shows that FDI is positive and significant in all models. This implies that higher financial development, in terms of better depth, access and efficiency of both financial markets and institutions, will encourage entrepreneurial activity in terms of size and concentration. Deeper, more tolerant and more efficient financial policies by markets and institutions in the country would encourage entrepreneurs to transform business opportunities into business firms. Higher gender equality will improve entrepreneurial activity. Lower tax obligations will help too. On the other hand, entrepreneurs will be more active if they were able to control their fear of failure leading to higher entrepreneurial activity. In addition, the innovation and regulatory governance environment in the country has a large effect on new business startups.

The study recommends than empirical accounts of financial development should adhere to higher measurement standards that properly take into consideration different aspects of financial development relating to depth, access and efficiency of both financial institutions and markets. It also recommends that the restructuring of the UAE economy towards stronger private sector development presupposes the multifaceted development of the financial system as well as the development of institutions that are necessary for incentivizing entrepreneurship.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Acknowledgement: All authors participated equally in the design and estimation of th ecurrent research.

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Appendix: Definitions of variables.

Variable	Definition and source
NEWBUSDENS	Number of new limited liability companies per 1000 people (logarithm), from the World Bank's World Development Indicators.
NEWBUSREG	Number of new limited liability companies registered (logarithm), from the World Bank's World Development Indicators.
FDI	The composite financial development index, from the International Monetary Fund. The index comprises information on financial depth, financial access and financial efficiency from both financial institutions and financial markets.
WBL	The Women, Business and the Law (WBL) index (logarithm), ranging from 0 to 100 (best), from the World Bank. It measures women's institutional empowerment conditions based on the law.
GDPCAP	GDP per capita (current USD) (logarithm), from the World Bank's World Development Indicators. It is generally considered a measure of economic development.
CREDITSOE	Credit to government and state-owned enterprises (% of GDP), from the World Bank's World Development Indicators.
TAX	Tax rate on corporate profits (%), from the World Bank's World Development Indicators.
INFLATION	Consumer price index (annual percent change), from the World Bank's World Development Indicators.
ENERGRENT	Total natural resources rents (% of GDP), from the World Bank's World Development Indicators.
FDINV	Foreign direct investment, net inflows (% of GDP), from the World Bank's World Development Indicators.
BUSOPP	Percentage of aged 18-64 population that perceives good opportunities to start a business, from the General Entrepreneurship Monitor surveys.
BUSSKILL	Percentage of aged 18-64 population that believe they have the required skill and knowledge to start a business, from the General Entrepreneurship Monitor surveys
BUSINFO	Percentage of aged 18-64 population that engaged in entrepreneurial activity in the business information sector, from the General Entrepreneurship Monitor surveys
PATENTS	Number of patent applications, from the World Bank's World Development Indicators.
TRADEMARKS	Number of trademarks applications, from the World Bank's World Development Indicators.
HIGHTECHEXP	High technology exports (% of manufactured exports), from the World Bank's World De velopment Indicators.
STARTBUSS	Index of easiness in starting a business, from the World Bank's Doing Business Report
PAIDINCAP	Paid-in Minimum capital to start a business (% of income per capita), from the World Bank's Doing Business Report
CONTRCOR	The control of corruption index, from the Worldwide Governance Indicators.
BRANCH	Number of commercial bank branches per 1000 people, from the World Bank's financial structure database. It is used as an IV instrument.