



Entrepreneurship and Sustainable Development in Egypt: An Empirical Analysis

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Abstract:

This study aimed to investigate the impact of entrepreneurship on sustainable development in Egypt across its various dimensions—economic, social, and environmental—using an Autoregressive Distributed Lag (ARDL) model over the period 2000-2023. The findings of the study revealed a positive and significant impact of entrepreneurship on sustainable development in all three dimensions in both the short and long run.

For the economic dimension, the coefficient of determination (R^2) was 99%, and the F-statistic (F_C) was 187.9 in the short run, with cointegration observed among the variables in the long run. For the social dimension, the results also showed a positive and significant impact of entrepreneurship on sustainable development in the short run, with an R^2 of 79% and an F-statistic of 28.70584 at a 1% significance level, with cointegration among the variables in the long run.

Finally, for the environmental dimension, the results demonstrated a positive and significant impact of entrepreneurship on sustainable development in the short run, with an R^2 of 94% and an F-statistic of 6.807721 at a 1% significance level, along with cointegration among the variables in the long run. This necessitates that the state takes the necessary measures to reduce carbon emissions resulting from increased entrepreneurial economic activities, and to direct these activities towards green production and health sectors, while focusing on increasing women's participation in these activities.

Keywords: Entrepreneurship, Sustainable development, ARDL, Egypt.

1. Introduction:

Entrepreneurship has become a key economic engine, vital for boosting a nation's growth, especially when focused on sustainability. This concept of sustainability covers several areas: environmental, social, economic, and human well-being. Today, connecting sustainability with the economy and business is becoming increasingly important (Jayaratne, M. et al, 2019). By turning fresh ideas into real-world solutions, it not only creates jobs but also helps develop better products and services, brings in

new technology, and makes production more efficient. The Global Entrepreneurship Monitor (GEM) looks at how much new businesses innovate by checking if they offer novel products, services, or technologies, no matter if it's a local, regional, or global impact. Even though inventing something entirely new is valuable, adapting and using innovative ideas from elsewhere is also key to boosting quality and efficiency (Global Entrepreneurship Monitor ,2023).

Furthermore, entrepreneurship is vital for achieving the Sustainable Development Goals (SDGs), which strive for a more equitable and sustainable global future. It contributes both directly and indirectly to this vision where these goals integrate and interlink (Mantlana, K. B., & Maoela, M. A. ,2020). notably reinforcing SDG 17 (Partnerships for the Goals). Specifically, entrepreneurship boosts SDG 8 by generating jobs and promoting inclusive economic growth, fosters SDG 9 through innovation and stronger local industries, helps realize SDG 10 by increasing participation in economic growth and narrowing wealth gaps, and supports SDG 11 by advancing sustainable urban development. Ultimately, entrepreneurship is a fundamental force across various SDGs, driving job creation, innovation, reduced inequality, and the development of sustainable communities, frequently through collaborative efforts. (Apostolopoulos, N.et al,2018) (Shabbir, M. S. ,2023) (Embry, E., York, J. G., & Edgar, S. ,2022) So, Egypt has thus taken it upon itself to embrace entrepreneurship to achieve economic efficiency and support sustainable development (**Egypt vision 2030**), and improving the entrepreneurial framework, which has become a competitive advantage, indicated by international indices, to attract more local and foreign companies.

Schumpeter in 1942 defined entrepreneurship as the act of revolutionizing production patterns. This involves leveraging inventions or, more broadly, untested technological possibilities to create new goods or produce existing ones in novel ways. It also encompasses finding new sources of supply or market outlets and even restructuring entire industries. As defined an entrepreneur as a trailblazer, confidently venturing into uncharted territory beyond what's known or expected (Schumpeter, J. A. ,1942) (Śledzik, K. ,2013)

Moreover, Schumpeter (1965) characterized entrepreneurs as individuals possessing the drive and capability to turn novel ideas or inventions into successful innovations. This involves taking the initiative, thinking creatively, and skillfully organizing resources to create new products, enhance existing ones, or introduce new organizational structures. Chand (2016) similarly defined entrepreneurs as those constantly seeking new opportunities and leveraging ideas to find rent-seeking advantages, all while embracing the inherent risks and uncertainties.

In addition, the study's significance also stems from the importance of entrepreneurship, which has reshaped the economic landscape, directly and indirectly, becoming a driver of sustainable global growth. Beyond that, it's a major catalyst for change across industrial sectors, contributing to the development of innovative products and services, improving logistical operations, and creating new business models. This continuous renewal forces companies and institutions to adapt to market and competitive shifts, underscoring the crucial role of entrepreneurs in advancing economic development. (Alzate, P. et al, 2024) (Moya -Clemente, I. et al, 2020).

However, a question remains: Is the impact of entrepreneurship always positive across all variables and dimensions of sustainable development (economic, social, environmental)? Or are there some drawbacks, or perhaps positive effects only on certain dimensions while neglecting others? This is what we will explore through a review of previous literature.

2. Literature Review:

Schumpeter addressed the relationship between entrepreneurship and development. In his 1912 work, *The Theory of Economic Development*, Schumpeter emphasized the crucial role of entrepreneurs in driving economic development. He argued that entrepreneurs achieve this by initiating "new combinations" and fostering innovation, thereby introducing dynamic and fundamental changes that move the economy out of a static state. This perspective was further reinforced in his later book, *The Theory of Economic Development*. (Schumpeter, J.A. 1912) (Schumpeter, J. A. ,1934). In addition, Schumpeter highlighted the entrepreneur's core role: repurposing existing resources for "new uses and new combinations." He famously argued that entrepreneurship is not only a distinct factor of production but also a rare social force that drives economic evolution. (Śledzik, K. ,2013).

Subsequently, the focus on entrepreneurship and its role in economic growth and development continued to grow in previous literature. (Ratten, V., & Usmanij, P. ,2021), (Jack Mason ,2018), (Poole, David Leonard ,2016), What distinguishes much of this literature is that it examined the impact of entrepreneurship solely on the economic dimension of development, without addressing the other dimensions (social and environmental). In addition to literature that has addressed the role of entrepreneurship in achieving sustainable development focusing only on its economic and social dimensions, without touching upon the environmental dimension. (Shan, S. et al ,2018) (Johnson, M. P., & Schaltegger, S. ,2019), (Apostu, S. A., & Gigauri,

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I.,2023) (Rahdari, A.et al,2016) (Xueqin Wang,2020), (Youssef, A. B., Boubaker, S., & Omri, A. (2018)), (İyigün, N. Ö. ,2015), (Andreopoulou, Z.et al,2014), (Cervelló-Royo.et al, 2019), in addition to others that addressed the three dimensions of sustainable development (Elmonshid et al, 2024),

(Shan, S.et al ,2018) study examined how technological entrepreneurship affected China's economic and social development between 1996 and 2014, using data from various Chinese government sources. The research, which measured entrepreneurship by the number of high-tech firms, aimed to inform long-term policy development. Findings revealed a strong positive correlation between technological entrepreneurship and economic growth, significantly boosting technological progress and foreign trade (with entrepreneurs generating about 71% of domestic invention patents and high-tech exports making up 22.6% of total exports). However, its impact on employment was minimal, showing an elasticity of only 2.79%. Upon analyzing this study, we find that it was limited to high-tech and technological entrepreneurship projects, excluding other types of ventures. Furthermore, it neglected the environmental dimension, focusing solely on the economic and social aspects of development.

Moreover, (Miah et al, 2024) study analyzed 461 articles from the Web of Science database (1998-2022) using VOS viewer and R Studio to understand the impact of social entrepreneurship on poverty reduction. The Findings show a sharp increase in research on this topic since 2009, highlighting social entrepreneurship's growing recognition as a solution to socio-economic problems, especially poverty. The analysis also revealed emerging research trends including entrepreneurial development, the influence of higher education, institutional partnerships, inclusive growth, and socio-economic empowerment, all geared towards fostering sustainable social change

Although, Apostu, S. A., & Gigauri, I. (2023) study used a fixed-effects panel regression model to assess how entrepreneurship affects the Sustainable Development Goals (SDGs) index in emerging nations. We employed various statistical tests (LLC, W-Stat - IPS, ADF-Fisher Chi-Square, and PP-Fisher Chi-Square) to ensure the stability of our data, which was analyzed using EViews 13. Our findings conclusively showed a statistically significant link between sustainability and entrepreneurial activity in these countries. Youssef, A. B., Boubaker, S., & Omri, A. (2018) study explored how innovation and strong institutions contribute to sustainability, especially in developing nations. Focusing on Africa and using a modified Environmental Kuznets Curve model, the research clarified the part played by innovation, institutional quality, and entrepreneurship in structural shifts towards a sustainable future, and identified conditions that help African economies become more sustainable.

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The findings indicated that both formal and informal entrepreneurship negatively impact environmental quality and sustainability in 17 African countries, with informal entrepreneurship being a greater contributor to this decline. Crucially, the study found that the relationship between entrepreneurship and sustainable development becomes positive when innovation and institutional quality are high. This underscores the vital role of both innovation and robust institutions in fostering sustainability across Africa.

while (Cervelló-Royo et al, 2019) study investigated how economic and sustainable development factors influence entrepreneurial initiatives in 57 countries in 2017. Using the fSQCA methodology and data from the Global Entrepreneurship Monitor, Country Risk Score, World Bank, and SDG Index, the research found that entrepreneurial endeavors are shaped by economic and financial conditions, alongside crucial elements like social equality, education, responsible production, and robust innovation and infrastructure.

This indicates that the impact of entrepreneurship varies for each country according to its specific economic, social, and environmental conditions.

In addition, (Elmonshid et al, 2024) study explored the link between entrepreneurship and sustainable development in Saudi Arabia from 2006 to 2022, looking at its economic, social, and environmental effects. Using an ARDL model, the study analyzed how entrepreneurial activities impact sustainable development, aligning with Saudi Vision 2030. The findings show that entrepreneurship significantly boosts Saudi Arabia's economic growth by creating jobs and driving innovation, thus aiding economic diversification away from oil. Socially, it positively influences gender equality and social inclusion through women's empowerment and youth employment. It also helps reduce carbon emissions and encourages sustainable business practices.

While, on a global scale, Egypt has only been the subject of one study Ali, M. A., Kabil, M., Alayan, R., Magda, R., & Dávid, L. D. (2021) within a period (2006-2017) has empirically analyzed Egypt's entrepreneurial ecosystem using the Global Entrepreneurship Index (GEI). This research found that Egypt's entrepreneurial "Ambition," particularly in "Process Innovation" and "Risk Capital," is promising. However, weaknesses exist in "Capacity" (specifically "Startup Skills" and "Competition") and "Attitudes," which significantly drag down Egypt's GEI score. The study also identified "Risk Acceptance" and "Networking" as the weakest links, suggesting that targeted national policies to bolster these areas could boost Egypt's GEI score by 2%.

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Among the previous literature that addressed entrepreneurship at the micro level, with application to companies and institutions, are studies such as (Xueqin Wang, 2020) (Andreopoulou, Z. et al (2014), İyigün, N. Ö. (2015), (Mason, J. (2018). Poole, David Leonard (2016) Ratten, V., & Usmanij, P. (2021) All of which emphasized the importance and role of entrepreneurship in achieving economic and social efficiency and sustainability within companies.

2-1 Study contribution:

The current study contributes to covering several gaps, which can be outlined as follows:

Temporal and Spatial Gap: This study examines a recent period (2000-2023) based on the latest available data. Furthermore, the study is specifically applied to **Egypt**, a geographic focus often missing in previous research during this period.

Econometric Gap: The current study measures the impact of entrepreneurship on sustainable development in Egypt across three dimensions: economic, social, and environmental. This necessitated the development of an econometric model that includes additional variables often overlooked by previous studies, yet crucial to sustainable development. These variables include the logarithmic value of real GDP per capita at constant prices, life expectancy at birth, CO₂ per capita carbon emissions, the number of internet subscribers, and the Global Entrepreneurship Index (GEI). The study employs a modern scientific approach to estimate the relationship between entrepreneurship and sustainable development, specifically utilizing the Autoregressive Distributed Lag (ARDL) Model.

3. Assessing Egypt's Entrepreneurial Climate:

A country's entrepreneurial climate is a key magnet for investment, pushing nations to enhance it for competitive advantage (Ali et al., 2021). Egypt's entrepreneurial ecosystem can be evaluated using 12 indicators from the Global Entrepreneurship Monitor, scored on a scale of 1 (inefficient) to 5 (highly efficient). A table then details Egypt's entrepreneurial framework compared to global and regional benchmarks⁽¹⁾.

⁽¹⁾ <https://www.gemconsortium.org/economy-profiles/egypt>

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Table (1): Evaluation of the Entrepreneurial Climate in Egypt during the period (2017/2022).

indicator	2017	2018	2021	2022	Regional	Global
Project financing	2.46	2.61	4.27	4.22	4.13	4.13
government policies: support and suitability	2.51	2.62	4.55	4.25	4.82	4.46
government policies: taxes and bureaucracy	1.88	2.16	4.16	3.68	4.68	4.68
government entrepreneurship	1.99	2.41	3.99	3.68	4.59	4.85
Entrepreneurship Education at the school level	1.22	1.48	2.19	2.33	3.29	3.31
Entrepreneurship Education at the post-school level	2.03	2.22	3.76	3.64	4.61	4.80
research and development	1.73	2.12	3.16	2.77	3.92	4.05
legal and commercial infrastructure	2.36	2.69	5.09	4.95	4.91	5.39
internal market dynamics	3.45	3.09	5.59	6.33	5.52	5.40
market entry regulation	2.47	2.62	4.83	4.48	4.38	4.55
natural infrastructure	3.64	3.88	6.63	6.91	5.50	6.25
cultural and social norms	2.38	2.76	5.16	4.84	4.97	5.00

Source: <https://www.gemconsortium.org/economy-profiles/egypt>

Egypt's entrepreneurial ecosystem saw overall improvement across all 12 indicators of its framework between 2017 and 2022, ranging from project financing to cultural and social norms. Notably, Egypt excelled in several areas, including entrepreneurial project financing, natural infrastructure, internal market dynamics, and surpassing the regional and global global averages in these specific categories.

However, despite overall progress, entrepreneurship education in Egypt lags global and regional benchmarks. In 2022, Egypt's entrepreneurship education index was 2.33, significantly lower than the regional average of 3.29 and the global average of 3.33, highlighting persistent challenges and the need for further development in this area.

Delving deeper, project financing in Egypt consistently outranked regional and global averages in most years (e.g., 4.27 in 2017 vs. 4.13 regional/global average). Similarly, natural infrastructure scores were higher than both regional (6.25) and global (5.50) averages in 2022 (e.g., 6.91 in 2017). This indicates Egypt's strong natural resources and an environment conducive to fostering entrepreneurship, evidenced by its recognition in the Doing Business 2020 report as one of the top 10 improved

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economies for three consecutive cycles, ranking 114th out of 190 countries with a score of 60.1. **(Doing Business, 2020, p:9)**

Furthermore, Egypt's internal market dynamics consistently outperformed regional and global averages (e.g., 6.33 in 2017 vs. 5.40 regional/5.52 global in 2022), suggesting a highly competitive market with abundant resources. The country also showed a strong focus on entrepreneurship education at the school level, with scores exceeding regional and global averages (e.g., 2.33 in 2017 vs. 3.31 regional/3.29 global in 2022), reflecting a commitment to integrating entrepreneurship into its educational system and updating curricula to match global trends.

While Egypt's overall entrepreneurial climate has improved, several indicators, including government policies, entrepreneurship programs, post-school entrepreneurship education, legal and commercial infrastructure, market entry regulations, and cultural/social norms, saw a setback in 2022 compared to 2021. To address this, Egypt needs to enhance these areas by improving education and training for its workforce, both in schools and beyond. It's also crucial to link research and development with existing industries and projects. These efforts will cultivate a more attractive entrepreneurial environment, ultimately fostering economic prosperity and sustainable development.

Egypt's government policies, reflecting its legislative support for entrepreneurship, improved significantly between 2017 and 2021. This was driven by various initiatives aimed at creating a more favorable business climate. Key legislative changes included the 2017 Investment Law, which provided investors with incentives, tax breaks, reduced red tape, and faster project establishment. Subsequent amendments in 2019 to Law No. 159 of 1981 introduced the "Golden License" to streamline company registration.

Complementing these legal reforms, several supportive organizations emerged: the General Authority for Investment facilitated investor communication, the Micro, Small, and Medium Enterprises Development Agency offered financial, technical, and legal assistance, and business incubators and accelerators provided vital services—including technical and advisory support, funding, expertise, and training—to help startups, especially in areas like technology, digitalization, and AI, launch innovative products and services.

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4. Assessing Egypt's Global and Arab Standing in the Entrepreneurship Index:

Egypt's score on the Global Entrepreneurship Index (GEI) dropped by 1.3 points in 2020, reaching 24.6 points after having been 25.9 points in 2018. This decline led to Egypt falling from 76th globally to 92nd worldwide. Regionally, Egypt ranked tenth among Arab nations and eleventh overall. This trend was largely consistent across most Arab countries, which also saw their GEI rankings decline in 2020 compared to 2018. The exceptions were the United Arab Emirates and Saudi Arabia, which improved their rankings to 25th and 42nd globally, respectively. Among Arab countries, the UAE topped the list, followed by Qatar, Bahrain, and Oman, with Saudi Arabia ranking fifth. These setbacks in the GEI for most Arab countries can be attributed to the COVID-19 pandemic, which severely impacted economic and social activities during extended periods of lockdown (GEM,2023, P:80).

Currently, Israel leads the region, ranking first in the Middle East and North Africa and fourth globally with a score of 76.25 points. This reflects comprehensive improvements in its entrepreneurship index, placing it among the top ten gainers worldwide for 2024. The United Arab Emirates follows closely, ranking fifth globally with 73.01 points for the same year.

Some studies attribute the performance of other nations in the region to their past socialist orientations and limited experience in a liberal economic environment. Conversely, countries that adopted open economic policies and incentivized investment performed better in entrepreneurship, compared to those that experienced political and economic instability (Acs, Z.et al ,2018).

5. Government Policies Adopted to Improve Egypt's Entrepreneurial Framework:

The Egyptian government has taken it upon itself to adopt numerous policies aimed at improving the entrepreneurial framework in Egypt, including:

- ◀ **Reducing business start-up costs as a percentage of income:** Business start-up costs as a percentage of income were 92.7% in 2003. Thanks to government intervention to improve the entrepreneurial framework and investment environment, this cost was reduced to 20.3% in 2019, reflecting a desire to enhance the business environment and support entrepreneurial activity and entrepreneurs in Egypt.
- ◀ **Decreasing the time required to start projects:** The time needed to start a project was 224 days in 2005. Following arrangements, legal amendments, and efforts to

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eliminate bureaucracy and red tape, this time was reduced to 173 days in 2019. This helped encourage and incentivize investors and entrepreneurs to swiftly proceed with establishing and launching new companies.

◀ **Reducing the time spent preparing and paying taxes:**

Egypt's government has significantly streamlined tax preparation for entrepreneurs, cutting the time spent from 711 days in 2000 to 370 days in 2019. These efforts, coupled with "one-stop shop" policies and other investment incentives, have successfully reduced bureaucracy and fueled a surge in startups.

The number of companies in Egypt skyrocketed from 900 in 2006 to 18,587 by 2023, demonstrating a robust entrepreneurial boom that contributes to economic growth, wealth creation, and increased domestic output. This period also saw a notable rise in per capita GDP, which climbed from \$1,981.8 in 2000 to \$4,177.614 in 2023, alongside an increased density of new business registrations. While Egypt's GDP growth has fluctuated (e.g., 6.73% in 2000 to 3.76% in 2023), these shifts are primarily linked to external factors like the 2008 global financial crisis, the 2011 Arab Spring events, and the ongoing exchange rate crisis.

◀ **Tax and Non-Tax Incentives:**

Egypt offers key incentives to boost investment. Under Law No. 152 of 2020, capital gains from selling assets like machinery or production equipment are tax-exempt, provided the funds are reinvested into new assets within a year. This encourages businesses to reinvest and upgrade.

Beyond tax breaks, the Micro, Small and Medium Enterprises Development Agency (MSMEDA) provides various non-tax incentives. These are available for specific projects defined in Law No. 152 of 2020, Article 23, and can be extended to other areas as determined by MSMEDA's board. Notably, these incentives target entrepreneurship, digital transformation, and artificial intelligence projects, highlighting Egypt's focus on fostering innovation and growth in these sectors.

From the foregoing, we conclude that the focus on improving the entrepreneurial framework in Egypt—through reducing business start-up costs as a percentage of income, decreasing the time needed to start projects, cutting the time spent on tax preparation and payments (hours), increasing R&D spending, and reducing the time to commence business activities (days)—along with the legal legislations, and tax and non-tax incentives received by entrepreneurial projects in Egypt, has contributed to an increase in the number of entrepreneurial startups. This, in turn, has led to a rise in Gross Domestic Product (GDP), national income, and overall economic development.

6. The Role of Entrepreneurship in Supporting the Egyptian Economy

Entrepreneurship is considered one of the most vital elements contributing to economic upliftment, capital mobilization, and development. It also fosters a stronger connection between the economy and environmental enhancement. Entrepreneurship has supported the Egyptian economy through several key channels:

- a) **Capital Formation:** Entrepreneurship is crucial for capital formation, empowering individuals to convert ideas into viable projects by pooling resources to build successful businesses. This process not only boosts personal finances by creating new capital and diverse income streams but also offers youth a prime chance to launch companies, hone management skills, and develop brands. Egypt's startup ecosystem is valued at an impressive \$8.3 billion, reflecting investments secured by its burgeoning startups, while global startup investment hit around \$285 billion across 18,587 companies by late 2023. This entrepreneurial drive has significantly increased Egypt's fixed capital formation, soaring from EGP 49.776 billion in 2000 to EGP 104.693 billion in 2023.

Additionally, the Gross Domestic Product (GDP) increased at an average growth rate of 4.38% between 2000 and 2023, rising from \$43,505.83 billion in 2000 (with a growth rate of 6.37%) to \$72,192.56 billion in 2023 (with a growth rate of 3.76%). Savings rates as a percentage of GDP also improved during this period, except for the period following the January 25th revolution. This setback was due to deteriorating economic conditions in Egypt, coinciding with the implementation of International Monetary Fund policies and political instability in the Middle East region.

b) Egypt's Growing Appeal for Investment:

Egypt is rapidly becoming a startup hub, attracting significant investment. In the first quarter of this year alone, Egyptian startups secured \$53 million, accounting for 12% of Africa's total funding. This follows a strong 2023 where Egypt captured 95% of North Africa's startup funding, solidifying its leadership in the region. Globally, Egypt ranks among the top 67 countries for its startup environment, a testament to its skilled workforce and supportive government policies. It's also the third-leading nation in the Middle East for startups, trailing only the UAE and Saudi Arabia. This robust performance has driven a massive surge in Foreign Direct Investment (FDI), which escalated from \$102 billion in 2000 to \$1.139 trillion in 2023, despite a brief dip in 2011 due to political unrest.

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The strength of Egypt's startup scene stems from its affordable and skilled talent pool, favorable entrepreneurial policies, and accessible venture capital. These factors make it particularly appealing for investments in the technology and e-commerce sectors. The government's dedication to fostering this growth is evident in the remarkable expansion of its entrepreneurial infrastructure, which now includes 38 business incubators and 13 accelerators. This supportive ecosystem positions Egyptian startups as leaders in the region.

- c) **Job Creation:** Entrepreneurship is a potent force for job creation, driving economic and social progress by expanding employment opportunities and lowering unemployment. In Egypt, a \$200 million entrepreneurship project launched in 2019 has funded around 188,000 entrepreneurs (43% women), resulting in roughly 380,000 private sector jobs. This builds on a prior successful initiative, "Enhancing Innovation for Financial Services," which created over 290,000 jobs. Consequently, following political stabilization, Egypt's unemployment rate has steadily decreased, dropping from 7.9% in 2021 to 7.3% in 2023, showcasing entrepreneurship's clear positive impact on Egyptian job growth.

7. Evolution of Egyptian Economic Indicators During the Period (2000-2023):

To understand the impact of entrepreneurship on economic development (specifically its economic dimension), we must examine the evolution of Egypt's economic indicators as follows:

a) Evolution of Egypt's Gross Domestic Product (GDP) During the Period (2000-2023):

Gross Domestic Product (GDP) has steadily increased throughout this period. It was at its lowest value in 2000, reaching approximately EGP 2,919,122 million, while it peaked at around EGP 35,590.2 million in 2023. The average for the period was EGP 10,396.7 million, with a standard deviation of 89,2272. The compound annual growth rate (CAGR) during this period was 3.94% annually. Similarly, average GDP per capita also trended upwards during this period. It was EGP 4,752.4 in 2000, its lowest point, and then rose to EGP 72,192.5 in 2023, its highest value for the period. The average for the period was EGP 27,620.9, with a compound annual growth rate of approximately 4.37% annually².

² <https://wdi.worldbank.org/country.Eg>.

b) Evolution of Gross National Income (GNI) During the Period (2000-2023):

Todaro defined Gross National Income (GNI) as "GDP plus factor income earned by residents abroad, minus income earned in the domestic economy by foreign individuals" (Todaro & Stephen, 2015:16). The following table shows that Gross National Income (GNI) also trended upwards during the 2000-2023 period. It was at its lowest value in 2000, reaching approximately EGP 1.00746 billion, then rose to EGP 7.78136E+12 billion in 2023, its highest value. The average for the period was EGP 7.78E+12 billion, with a standard deviation of 847,159.3. The compound annual growth rate (CAGR) during this period was 1.72%. Regarding GNI per capita, it also showed an increasing trend, rising from EGP 14,411.6 in 2000 to EGP 65,376.6 in 2023. The average for the period was EGP 10,186.8, with a compound annual growth rate of approximately 3.07% annually.

c) Gross National Saving During the Period (2000-2023):

Gross National Saving (GNS) similarly trended upwards during the 2000-2023 period. It was at its lowest value in 2000, reaching approximately EGP 1.00746E+12 billion, and then rose to EGP 7.78136E+12 billion in 2023, its highest value. The average for the period was EGP 131,807.164 billion, with a standard deviation of 17,630.58. The annual compound growth rate (CAGR) was **1.53%**.

However, it's evident that saving as a percentage of national income declined over the time series. It reached its highest value at 23% in 2007 and 2008, then began to decrease afterwards. This reduction is a result of Egypt's recent economic policies and borrowing from the International Monetary Fund (IMF), which in turn imposes economic reform policies such as currency flotation and subsidy reduction, leading to increased inflation.

d) Net Foreign Direct Investment (FDI) Flows During the Period (2000-2023):

Net Foreign Direct Investment (FDI) fluctuated during the 2000-2023 period. FDI stood at approximately \$1.235 billion in 2000, then decreased to \$2025.8 million in 2001. It experienced several more significant declines, most notably during the January 25th Revolution in 2011, a period characterized by political instability, when it reached a low of -\$2865.6 million, its lowest value during the entire period. Subsequently, FDI rose to \$173.248 billion in 2023, its highest value. The average for the period was \$6.002 billion, with a compound annual growth rate (CAGR) of **5.3%**.

8. Data and Methodology:

Drawing on previous research, this study defines entrepreneurship using indicators like new business density and registered new businesses, as seen in Simona & Iza (2023). Sustainable development is measured across its economic, social, and environmental facets, using GDP per capita, carbon emissions per capita, and life expectancy at birth, following the framework of Elmonshid et al. (2024). For the current study, the independent variables are the New Business Index (Newent), Business Density (Dnewent), and the Global Entrepreneurship Index (GEI). The dependent variables encompass sustainable development's economic, social, environmental, and technological dimensions, specifically: real GDP per capita, life expectancy, carbon emissions per capita, Control variables include GERD, HDI, and GII.

a) Study's Spatio-Temporal Boundaries:

This study measures the impact of the independent variables on sustainable development in Egypt during the period 2000-2023. This is based on available data from the World Bank website, the World Intellectual Property Organization (WIPO), and The Global Entrepreneurship Monitor (GEM).

b) Study Hypotheses:

This study aims to verify three core hypotheses concerning the relationship between entrepreneurship and sustainable development (across its economic, social, and environmental dimensions) in Egypt during the period 2000-2023. These hypotheses are as follows:

- There is a statistically significant and positive relationship between entrepreneurship indicators (number of new companies, business density, and the entrepreneurship index) and real GDP per capita in both the short and long run. (Economic Dimension)
- There is a statistically significant and positive relationship between entrepreneurship indicators (number of new companies, business density, and the entrepreneurship index) and per capita carbon emissions in both the short and long run. (Environmental Dimension)
- There is a statistically significant and positive relationship between entrepreneurship indicators (number of new companies, business density, and the entrepreneurship index) and life expectancy at birth in both the short and long run. (Social Dimension)

c) Testing Time Series Stationarity and Determining the Appropriate Measurement Method

The researcher utilized both the Augmented Dickey-Fuller (ADF) test and the KPSS test to determine the integration order of the variables. After conducting these Unit Root Tests to ascertain whether the time series data for each variable was stationary, thus avoiding the problem of spurious regression, it was evident that the time series of the studied variables were stable. Some variables were stationary at level (I_0), while others were stationary at the first difference (I_1). This outcome allows for the use of the Autoregressive Distributed Lag (ARDL) Model without concerns about encountering spurious or false regression (Granger & Newbold, 1974).

This model involves two stages:

1. Cointegration Test: "Bounds Test"

2. ARDL VECM (Vector Error Correction Model) Methodology

Null Hypothesis (H_0): The series is stationary and has no unit root ($\alpha=0$).

Alternative Hypothesis (H_1): The series is non-stationary and has a unit root ($\alpha>0$).

The null hypothesis is accepted if the calculated t-statistic (t_{cal}) is less than the critical t-value (T_{tab}) at a significance level of 1%, 5%, or 10%. In this case, the series is stationary at order zero, denoted as $I(0)$.

The following equations represent the relationship:

$$1\text{-Log Gdpcapita} = B_0 + B_1 \log \text{Newent} + B_2 \log \text{Dnewent} + B_3 \log \text{GEI} + B_4 \log \text{GII} + B_5 \log \text{HDI} + B_6 \log \text{GERD} + B_7 \log \text{FDI} + U \dots\dots\dots (1)$$

$$2\text{-Log age} = B_0 + B_1 \log \text{Newent} + B_2 \log \text{Dnewent} + B_3 \log \text{GEI} + B_4 \log \text{GII} + B_5 \log \text{HDI} + B_6 \log \text{GERD} + B_7 \log \text{FDI} + U \dots\dots\dots (2)$$

$$3\text{-Log co}_2 = B_0 + B_1 \log \text{Newent} + B_2 \log \text{Dnewent} + B_3 \log \text{GEI} + B_4 \log \text{GII} + B_5 \log \text{HDI} + B_6 \log \text{GERD} + B_7 \log \text{FDI} + U \dots\dots\dots (3)$$

Where: The equations measure the impact of entrepreneurship on sustainable development across its four dimensions (economic, social, environmental) which are the dependent variables.

:Log Gdpcapita	Average GDP per capita in its logarithmic form
:Log age	Life expectancy at birth in its logarithmic form
:Log co ₂	Average per capita carbon emissions in metric tons in its logarithmic form

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Remaining variables

B0	A constant segment tests the positive impact of entrepreneurship in Egypt on sustainable development when it is significant.
B1 logNewent	The number of companies in its logarithmic form
B2 Log Dnewent	The density of business establishments in its logarithmic form.
B3 logGEI	The entrepreneurship index in its logarithmic form
B4 log GII	The innovation index in its logarithmic form
B5 log HDI	The Human Development Index (HDI) in its logarithmic form
B6 log GERD	The expenditure on research and development (R&D) index in its logarithmic form
B7 LogFDI	The foreign direct investment in its logarithmic form
U	Margin of error

The EViews 12 software identified 4 appropriate lags. The natural logarithm of the variables was taken in preparation for the cointegration test. Furthermore, the small sample properties of the ARDL approach are superior to the Johansen and Juselius's cointegration method Pesaran, M.H. and Shin, Y. (1999) Bounds Test was conducted for the study's variables across both the short and long run. The researcher tested the model in three stages, representing the three equations, which measure the impact of entrepreneurship on sustainable development across its three dimensions: economic, social, and environmental, as follows:

1. Measuring the impact of the New Business Index, business density, entrepreneurship index, and research and development (R&D) expenditure on the logarithmic form of real GDP per capita in the short run yielded the following results (Developmental Dimension):
 - The coefficient of determination (R^2) was 99%.
 - The overall significance of the regression relationship was confirmed by the F-statistics (174.9386).
 - According to the t-statistic (T_c) test, the entrepreneurship indicators were significant at the 1% level. The Durbin-Watson statistic was 2.773954, which is above the upper limit, confirming no issues in estimation and no serial autocorrelation problems in the regression residuals.

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Residual Test:

- Since the p-value is greater than 5%, we reject the null hypothesis and accept the alternative hypothesis, which states that there is no serial correlation problem in the residuals.

Homoscedasticity Test:

- Since the p-value is greater than 5%, we reject the null hypothesis and accept the alternative hypothesis, which states that there is no heteroscedasticity, meaning the variance of the errors is constant (homoscedastic).

For the long run, the ARDL Long Run Form and Bounds Test was utilized. The calculated F-statistic of 6.140203 is greater than the Upper Critical Bound (UCB) of 5 (I_1) at a 1% significance level, indicating the relationship's significance. This means we reject the null hypothesis and accept the alternative hypothesis of cointegration among the variables. Therefore, there is a cointegrating relationship and a long-term association between the increase in the number of new companies, business density, and the increase in real GDP per capita.

2. Measuring the impact of entrepreneurship indicators on the logarithmic form of life expectancy at birth (logage) in the short run, representing the social dimension of sustainable development, yielded the following results: (Social Dimension)

- The coefficient of determination (R^2) was 79%.
- The overall significance of the regression relationship was confirmed by the F-statistics (28.70584).
- According to the t-statistic (T_c) test, the entrepreneurship indicators were significant at the 1% level.
- The Durbin-Watson statistic was 2.060430, which is above the upper limit, confirming no issues in estimation and no serial autocorrelation problems in the regression residuals.

Residual Test:

Since the p-value is greater than 5%, we reject the null hypothesis and accept the alternative hypothesis, indicating no serial correlation problem in the residuals.

Homoscedasticity Test:

As the p-value is greater than 5%, we reject the null hypothesis and accept the alternative hypothesis, confirming no heteroscedasticity, meaning the variance of the errors is uniform.

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Long-Run Analysis:

In the long run, the calculated F-statistic was 2.041300. This value falls between the Upper Critical Bound (UCB) of 3.35 (I_1) and the Lower Critical Bound (LCB) of 2.63 (I_0) at a 10% significance level. This leads us to accept the null hypothesis and reject the alternative hypothesis, concluding that there is no cointegration among the variables.

3. Measuring the impact of entrepreneurship indicators on the logarithmic form of per capita carbon emissions ($\log CO_2$) in metric tons in the short run, representing the environmental dimension yielded the following results: (Environmental Dimension)

- The coefficient of determination (R^2) was 94%.
- The overall significance of the regression relationship was confirmed by the F-statistics (6.807721).
- According to the t-statistic (T_c) test, the entrepreneurship indicators significantly impacted per capita carbon emissions ($\log CO_2$) at the 1% significance level.
- The Durbin-Watson statistic was 3.055617, exceeding the upper limit, confirming no estimation problems and no serial autocorrelation in the regression residuals.

- Residual Test:

- Since the p-value is greater than 5%, we reject the null hypothesis and accept the alternative hypothesis, indicating no serial correlation problem in the residuals.

- Homoscedasticity Test:

- As the p-value is greater than 5%, we reject the null hypothesis and accept the alternative hypothesis, confirming no heteroscedasticity, meaning the variance of the errors is uniform.

- Long-Run Analysis:

- In the long run, the calculated F-statistic was 4.485134. This value is higher than the Upper Critical Bound (UCB) of 3.35 (I_1) and the Lower Critical Bound (LCB) of 2.63 (I_0) at a 10% significance level. This leads us to reject the null hypothesis and accept the alternative hypothesis, concluding that there cointegration among the variables in the long run.

9. Finding:

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The model testing clearly indicates a statistically significant relationship between entrepreneurship and sustainable development across its various dimensions. Key findings can be summarized as follows:

- a) For the first hypothesis: There is a statistically significant relationship between entrepreneurship indicators (number of new companies, business density, entrepreneurship index, and innovation index) and real GDP per capita in both the short and long run.
 - The results support the first hypothesis, revealing a significant and positive impact of entrepreneurship on the economic aspect of sustainable development in both the short and long term. The coefficient of determination (R^2) was 99%, and the F-statistic (FC) was 174.9. This suggests that entrepreneurship indicators account for 99% of the changes in per capita income. For the long run, the ARDL Long Run Form and Bounds Test showed a calculated F-statistic of 6.140203, which is greater than the Upper Critical Bound (UCB) of 5 (I_1) at a 1% significance level. This confirms the significance of the relationship, leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis, which posits the existence of cointegration among the variables.
- b) Regarding the second hypothesis: There is a statistically significant relationship between entrepreneurship indicators (number of new companies, business density, entrepreneurship index, and innovation index) and per capita carbon emissions in both the short and long run. This hypothesis was accepted.
 - The coefficient of determination (R^2) was 94%, and the overall significance of the regression relationship was confirmed by the F-statistic (6.807721) at a 1% significance level. In the long run, the calculated F-statistics were 4.485134, greater than the Upper Critical Bound (UCB) of 3.35 (I_1) at a 10% significance level. This indicates that the null hypothesis was rejected, and the alternative hypothesis of cointegration among the variables was accepted.
- c) Regarding the third hypothesis: There is a statistically significant relationship between entrepreneurship indicators (number of new companies, business density, entrepreneurship index, and innovation index) and average life expectancy at birth in both the short and long run.
 - This hypothesis was accepted. The coefficient of determination (R^2) was 79%, and the overall significance of the regression relationship was confirmed by

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the F-statistic (28.70584) at a 1% significance level. In the long run, the calculated F-statistic was 2.041300. This value is smaller than both the Upper Critical Bound (UCB) of 3.35 (I_1) and the Lower Critical Bound (LCB) of 2.63 (I_0), meaning the null hypothesis was rejected and the alternative hypothesis of cointegration among the variables in the long run was accepted.

- d) Entrepreneurship fuels economic growth and capital building by ensuring resources are used efficiently. This not only boosts the financial well-being of entrepreneurs but has also led to a significant increase in Egypt's fixed capital formation, which grew from EGP 49.776 billion in 2000 to EGP 104.693 billion in 2023.
- e) Entrepreneurship is a key driver of job creation, boosting employment rates and significantly reducing unemployment. For instance, roughly 188,000 entrepreneurs in Egypt, 43% of whom are women, received project funding that led to the creation of about 380,000 private sector jobs. This success built on a previous initiative, "Enhancing Innovation for Financial Services," which generated over 290,000 jobs in five years. This positive trend is clearly reflected in Egypt's declining unemployment rates, particularly since the political stability after the Arab Spring events. The unemployment rate dropped from 7.9% in 2021 to 7.4% in 2022 and 7.3% in 2023, underscoring entrepreneurship's direct and positive impact on job growth across the country.
- f) Egypt's focus on improving its entrepreneurial framework has yielded significant results. By reducing business start-up costs (as a percentage of income), decreasing the time needed to launch projects, cutting the hours spent on tax preparation and payments, increasing R&D spending, and shortening the time to commence business activities (in days), the country has fostered a thriving environment for new ventures.

These combined efforts have directly contributed to a substantial increase in the number of startups, consequently boosting GDP, national income, and overall economic development. For instance, the number of companies in Egypt soared from approximately 900 in 2006 to 18,587 by 2023. This growth coincided with a rise in average GDP per capita, which climbed from \$1,981.8 in 2000 to \$4,177.614 in 2023, representing an average growth rate of 4.376%. Furthermore, the density of new business establishments (new company registrations per 1,000 people aged 15-64) increased from 0.018 in 2006 to 0.27 in 2022.

- g) Entrepreneurship has significantly boosted foreign investment attraction in Egypt. Egyptian startups made a remarkable leap in attracting investments

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during the first quarter of 2022, raising \$53 million, which accounted for 12% of the total funding across the African continent.

10. Recommendations:

- a) Strengthening Support for Entrepreneurial Initiatives to Drive Economic Growth: Given the strong link between entrepreneurship indicators and GDP per capita, policymakers should continue to facilitate entrepreneurship through tax incentives, access to capital, and business development programs.
- b) Promote Environmentally Sustainable Entrepreneurship: Since entrepreneurship affects carbon emissions, Egypt should encourage eco-friendly startups and innovations aimed at reducing carbon footprints, possibly through grants or tax breaks for green businesses.
- c) Foster Social Entrepreneurship to Improve Life Expectancy: Encourage ventures in healthcare, education, and community services that contribute to higher life expectancy. Partner with NGOs and private sectors to fund such initiatives.
- d) Expand Funding Programs Targeting Women Entrepreneurs: With 43% of funded entrepreneurs being women leading to significant job creation, expand similar programs to enhance gender equality and employment.
- e) Continue Streamlining Business Regulations: Reduce the time and cost to start businesses, simplify tax processes, and enhance R&D investments to sustain the growth in startups.
- f) Attract Foreign Investment through Startup Promotion: Highlight Egypt's startup success to international investors, offering incentives for foreign capital in high-potential sectors.
- g) Monitor Unemployment Trends and expand Successful employment Initiatives: Build on existing programs like the "Enhancing Innovation for Financial Services" that created 290k jobs, focusing on sectors with high employment potential.
- h) Enhance Capital Formation via Efficient Resource Use: Support policies that ensure entrepreneurs optimize resource use, leading to increased fixed capital formation as seen from 2000 to 2023.
- i) Leverage Data for Policy Adjustment: Use high R^2 values (99%, 94%) to refine models and ensure policies are data-driven.

11. Conclusion:

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This study aimed to investigate the impact of entrepreneurship on sustainable development in Egypt across its various dimensions—economic, social, and environmental—using an Autoregressive Distributed Lag (ARDL) model over the period 2000-2023. The study's findings revealed a positive and significant impact of entrepreneurship on sustainable development in all three dimensions in both the short and long run. For the economic dimension, the coefficient of determination (R^2) was 99%, in the short run, with cointegration observed among the variables in the long run. For the social dimension, the results also showed a positive and significant impact of entrepreneurship on sustainable development in the short run, with an R^2 of 79% with cointegration among the variables in the long run.

Finally, for the environmental dimension, the results demonstrated a positive and significant impact of entrepreneurship on sustainable development in the short run, with an R^2 of 94%, along with cointegration among the variables in the long run. This necessitates that the state take the necessary measures to reduce carbon emissions resulting from increased entrepreneurial economic activities, and to direct these activities towards green production and health sectors, while focusing on increasing women's participation in these activities.

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Appendix:
Table (1): Time Series Stationarity Test

variable	Augmented Dickey–Fuller						KPSS			
	level			first deference			level		first deference	
	Constant	Constant and Trend	No Constant no	Constant	Constant and Trend	No Constant no Trend	Constant	Constant and Trend	Constant	Constant and Trend
Newent	1.464808-	2.332317-	0.489858	*4.516414-	*4.576952-	4.212425-*	0.586793**	0.143316**	0.132038	0.061867
Dnewent	-1.887144	1.565662-	0.771825-	*4.893392-	*5.146075-	*4.989027-	0.210951	0.166380	0.221225	0.092208
GEI	-6.356*	-1.7866	0.0950	-1.7646	-1.595	-2.192**	0.3833***	0.3965*	0.500**	0.500*
GII	-2.4054	-3.4051***	-0.994	-3.9472**	-2.3416	-3.8371*	0.3514***	0.1916**	0.500**	0.500*
age	-1.974	2.6768	-1.3606	2.0439	0.3849	-1.0141	0.478**	0.1569**	0.379***	0.1385***
GDPcapita	3.779**	1.4249	6.0817*	1.0038	-5.6311**	-2.1290**	0.4791**	0.1585**	0.3357***	0.5000*
dsl	*9.405038	1.071698	1.229485	0.099408	-3.69671**	1.193455	0.137951	** 0.190545	0.533801	0.082346
HDI	-0.3464	-5.264**	5.2644*	-7.937*	-7.224*	-0.3015	0.4834**	0.0916	0.0333	0.0333
GERD	-2.519541	1.1280	-1.1928	-3.5079**	-4.7159**	-3.3217*	0.4137***	0.1404***	0.4379**	0.1342***
carbon	-0.0870	-0.7428	-0.9498	-3.635***	-5.047**	-4.047*	0.377***	0.1379***	0.3514***	0.5000*
employ	-3.0737**	-1.456	4.1907*	1.056	-5.245**	-1.307***	0.5549**	0.1587**	0.2368	0.4500*
unemploy	-7.148*	-0.538	0.0103	-1.005	-5.919*	-2.3015**	0.2693	0.1468**	0.3539***	0.3766*
SDG	-4.1061*	-1.126	0.1508	-0.7695	3.6879***	-2.0445**	0.1143	0.1093	0.1870	0.1491**
Critical Values (Tabled Values)										
1%	-3.752946	--4.416345	2.669359-	3.769597-	4.440739-	2.674290-	0.739000	0.216000	0.739000	0.216000
5%	2.998064-	3.622033-	1.956406-	3.004861-	3.632896-	1.957204-	0.463000	0.146000	0.4630	0.146000
10%	2.638752-	3.248592-	1.608495-	2.642242-	3.254671-	1.608175-	0.347000	0.119000	0.3470	0.119000

Stable at 1% level Stable at 5% level *Stable at 10% level .Source: E-VIEWS 12 Software Output

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Table (2)

Dependent Variable: LGGDPC
Method: ARDL
Date: 1/6/25 Time: 19:20
Sample (adjusted): 2000 2023
Included observations: 20 after
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic):
Fixed regressors: C
Number of models evaluated: 100
Selected Model: ARDL(2, 4, 4)

Variable	Coefficient	Std.	t-	Prob.*
LGGDP	-0.185349	0.28167	-	0.5316
LGGDP	0.281253	0.17187	1.63641	0.1458
LGNEW	-0.033477	0.01298	-	0.0365
LGNEW	0.047032	0.01815	2.59059	0.0359
LGNEW	0.105684	0.02101	5.02796	0.0015
LGNEW	0.014476	0.03412	0.42425	0.6841
LGNEW	-0.054635	0.01833	-	0.0205
LGDN	-0.071122	0.02277	-	0.0168
LGDN	0.049599	0.02941	1.68649	0.1356
LGDN	0.173156	0.02952	5.86565	0.0006
LGDN	0.061010	0.05627	1.08410	0.3142
LGDN	-0.078136	0.02555	-	0.0184
C	3.008491	0.85493	3.51898	0.0097
R-	0.996677	Mean		3.447500
Adjusted	0.990979	S.D. dependent		0.088012
S.E. of	0.008359	Akaike info		-
Sum	0.000489	Schwarz		-
Log	77.80749	Hannan-Quinn		-
F-	174.9386	Durbin-Watson		2.773954
Prob(F-	0.000000			

*Note: p-values and any subsequent tests do not

selection.

Dependent Variable: LGAGE

Table (3)

Date: 1/6/25 Time: 21:17
Sample (adjusted): 2000 2023
Included observations: 23 after
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic):
Fixed regressors: C
Number of models evaluated: 100
Selected Model: ARDL(1, 0, 0)
Note: final equation sample is larger than selection

Variable	Coefficient	Std.	t-	Prob.*
LGAGE	0.670685	0.15652	4.28473	0.0004
LGNEW	0.000928	0.00083	1.11636	0.2782
LGDN	0.001342	0.00154	0.86917	0.3956
C	0.606615	0.28738	2.11080	0.0483
R-	0.819250	Mean		1.844783
Adjusted	0.790710	S.D. dependent		0.005931
S.E. of	0.002713	Akaike info		-8.824482
Sum	0.000140	Schwarz		-8.627005
Log	105.4815	Hannan-Quinn		-8.774817
F-	28.70584	Durbin-Watson		2.060430
Prob(F-	0.000000			

*Note: p-values and any subsequent tests do not
selection.

Dependent Variable: LGCO2

Table (4)

Method: ARDL
Date: 1/6/25 Time: 23:56
Sample (adjusted): 2000 2023
Included observations: 20 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LGNEWT
Fixed regressors: C

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Number of models evaluated: 100
Selected Model: ARDL(4, 3, 4)

Variable	Coefficient	Std.	t-	Prob.*
LGCO2t	0.757255	0.51262	1.47719	0.1901
LGCO2t	-1.730585	1.84707	-	0.3850
LGCO2t	0.854766	1.82753	0.46771	0.6565
LGCO2t	1.168179	1.19452	0.97794	0.3659
LGNEW	0.120691	0.08272	1.45892	0.1949
LGNEW	-0.036436	0.12901	-	0.7871
LGNEW	0.074018	0.11312	0.65431	0.5372
LGNEW	-0.280979	0.10013	-	0.0309
LGDNE	0.203747	0.14631	1.39249	0.2132
LGDNE	-0.068878	0.17653	-	0.7099
LGDNE	0.167654	0.16458	1.01867	0.3477
LGDNE	-0.441109	0.13227	-	0.0157
LGDNE	-0.065754	0.05479	-	0.2754
C	0.059277	0.56809	0.10434	0.9203
R-	0.936508	Mean		0.323500
Adjusted	0.798943	S.D. dependent		0.114399
S.E. of	0.051296	Akaike info		-2.906388
Sum	0.015788	Schwarz		-2.209376
Log	43.06388	Hannan-Quinn		-2.770324
F-	6.807721	Durbin-Watson		3.055617
Prob(F-	0.013544			

*Note: p-values and anv subsequent tests do not selection.

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ريادة الأعمال والتنمية المستدامة في مصر: تحليل تجريبي

د/ أمانى صلاح محمود المخزنجى

مدرس اقتصاد – معهد العبور العالى للإدارة والحاسبات ونظم المعلومات

الملخص:

هدفت الدراسة إلى قياس أثر ريادة الأعمال على التنمية المستدامة في مصر عبر أبعادها المختلفة الاقتصادية، الاجتماعية، والبيئية؛ باستخدام نموذج الانحدار الذاتي للفجوات الموزعة Autoregressive Distributed Lag (ARDL) خلال الفترة 2000-2023، وقد أظهرت نتائج الدراسة عن وجود أثر معنوي لريادة الأعمال على التنمية المستدامة في أبعادها الثلاثة، سواء على المدى القصير أو الطويل؛ فالنسبة للبعد الاقتصادي، بلغت قيمة معامل الارتباط 99% (R^2)، وبلغت قيمة إحصائية $F(FC)$ 187.9 على المدى القصير، مع وجود تكامل مشترك بين المتغيرات على المدى الطويل، أما بالنسبة للبعد الاجتماعي فقد أظهرت النتائج أيضاً أثراً إيجابياً ومعنوياً لريادة الأعمال على التنمية المستدامة على المدى القصير، حيث بلغت قيمة (R^2) 79% وقيمة إحصائية 28.70584 (FC) عند مستوى معنوية 1%، مع وجود تكامل مشترك بين المتغيرات على المدى الطويل.

بالإضافة إلى البعد البيئي حيث أظهرت النتائج أيضاً أثراً إيجابياً ومعنوياً واضحاً لريادة الأعمال على التنمية المستدامة على المدى القصير، حيث بلغت قيمة (R^2) 94%، كما بلغت 6.807721 (FC) عند مستوى معنوية 1%، بالإضافة إلى وجود تكامل مشترك بين المتغيرات على المدى الطويل؛ مما يستدعي إتخاذ الدولة الإجراءات اللازمة لخفض الانبعاثات الكربونية الناتجة عن تزايد الأنشطة الاقتصادية الريادية، وتوجيه هذه الأنشطة نحو الإنتاج الأخضر والقطاعات الصحية، مع التركيز على زيادة مشاركة المرأة في هذه الأنشطة.

الكلمات المفتاحية: ريادة الأعمال، التنمية المستدامة، ARDL، مصر.