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IJEMS | SCIENTIFIC ARTICLE

Algeria's Role in the African Sahel: Toward a New Security Paradigm

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This paper investigates the Algerian role in the Sahel region. Traditionally, Algeria has always been a key broker of stability in the African Sahel, which continues to face crucial challenges and significant threats. As a regional power, Algeria has interests in the Sahel owing to geographical contiguity, strategic depth and historical ties. Consequently, Algeria's renewed interest in sub-Saharan Africa is driven to a large extent by the growth of regional terrorism, and the collapse of the Malian State in 2012, followed by the French military intervention in Mali in 2013. As such, Algeria insists on maintaining an autonomous approach in engineering its security strategy in the region. As part of its security approach, Algeria seeks to prioritise political and diplomatic mechanisms over those of the military in order to manage risks within a framework that combines securitization and humanization. This paper takes a role theory lens to examine Algeria as a middle power, one that transcends the logic based on material capabilities and tangible resources.

Key Words: Algeria, security, African Sahel, Mali, counter terrorism

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INTRODUCTION

Over the last few decades, Algeria has increasingly focused on African Sahel security issues for fear that the region could become a haven for terrorist groups. The Sahelian states, which share extensive borders with Algeria, have witnessed insecurity due to the instability in their political systems. This political instability was impacted by different crises that several countries in the region, including Mali, have been dealing with. This kind of weak political situation is obvi-

ously a reflection of the domino theory.[1] In other words, the collapse of one state could cause a domino effect that might destabilize the entire region.

On the other hand, by using national role conceptions, we can
[156] explain better the Algerian strategy in the African Sahel, as well as by using other approaches, common in the literature, such as the identity-based approach. So, in order to provide a better framework of analysis for Algeria's activism in the African Sahel, we are going to elaborate why we find national role conceptions theory to be the most suitable one for our research. This paper argues that the updated Algerian strategy in the Sahel is marked by strong activism and vibrant engagement in order to protect its national interests abroad and to expand its regional leverage and soft power in the Sahel region. Therefore, in order to better understand Algeria's growing role in the tumultuous Sahel region, it is useful to consider how changes at the regional level coupled with major security concerns can affect intraregional dynamics. Recent literature has attributed Algerian involvement in its neighbourhood to its geographic centrality as a neighbour to the three countries that make up African Sahel, where Algeria has always been a regional heavyweight. By the same token, Algeria's growing activities across the Sahel region (Algeria's top geopolitical priority region) fall under the banner of reaffirming Algeria's role in its neighbourhood and shifting regional trends as mainly an instrument in the larger geopolitical contest with regional competitors. Accordingly, most literature has adopted an explanatory logic to explore how the Sahel region has tremendously strategic importance for Algeria. However, this geopolitical explanation for the 'fact-based strategic focus' does not appear sufficient if it is not coupled with the relevancy of the state's geopolitical regional environment and the interests of its ruling regime in conditioning its responses to external constraints and determin-

[1] The basic logic underlying the domino theory is that the changes in one country's political system spreads to neighbouring countries, affecting these countries' political systems similarly, which spreads to their neighbours, and so on (Ninkovich 1994).

ing its foreign policy outcome and not least, the complexities in international dynamics. Alternatively, role theory can be an analytical vehicle to study how changes at the global level can affect regional dynamics. According to role theory, a role is defined as 'a pattern of recurring action that performs a function within the context of a system of interacting elements or in a situation.' Holsti (1970, 233) defines national role conceptions as 'the policymakers' own definitions of the general kinds of decisions, commitments, rules and actions, suitable to their state, and of the functions, if any, their state should perform on a continuing basis in the international system or in subordinate regional systems. As a matter of fact, major views in academic literature that try to interpret Algeria's recent strategy in the African Sahel can be roughly assessed in three groups according to their causation.

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Firstly, Algeria's geopolitical location has defined the nature of its security doctrine since independence to this day, vis-à-vis its neighbour, especially in the African Sahel, which in turn dictates Algeria's insistence on maintaining an autonomous approach in engineering its security strategy in the region. Secondly, the African Sahel region is considered to be sensitive to the security of Algeria, especially the southern region of Algeria. In fact, the African Sahel is, as Yahia Zoubir puts it, 'Algeria's Soft underbelly' and 'the corridor of all danger' (Zoubir 2018, 72). These factors have forced Algeria to take draconian steps, or even security measures, to ensure and defend its territorial sovereignty and to face the various threats emanating from the Sahel as they endanger the security and the sovereignty of Algeria. Thirdly, in parallel with the African Sahel region becoming an 'arc of crises,' the debates on its complex crises, which have their own domino effects beyond the national borders, project serious security challenges to their wider neighbourhood, which has significantly increased the literature, already dealing with Algerian security perceptions and behaviour in the African Sahel.

This paper aims to deconstruct the Algerian strategy dynamics in the African Sahel by using role theory, which offers a conceptual repertoire and framework to examine a role-based argument. This argument starts from the premise that the foreign policy of a re-

gional actor is not only driven by interests and survival, but also by social positions and standings in the system. Thus, it is hoped that such a theoretical framework will yield a more exhaustive understanding of the shifts in Algeria's regional policy, its different
[158] dimensions, as well as the various limitations and prospects that yields. The paper is structured as follows: first, it starts by exploring Algeria's Sahelian policy as a framework to examine the interaction between global and regional levels through the lens of role theory and how this interaction can shape Algeria's behaviour at the regional level; then, it will offer an outlook as to how a perception of change in the role of Algeria in the region has engendered changes in regional actors' roles.

This aim will be further fulfilled by answering two specific research questions:

1 How do Algerian government officials formulate foreign policy with respect to the Sahel region?
2 What signs of the different roles (active independent, regional leader) can be found in Algeria's foreign policy with respect to the Sahel region and Algeria's middle power role?

ALGERIAN STRATEGY DYNAMICS IN THE AFRICAN SAHEL

Algeria has been the principal mediator and guarantor of previous peace accords in northern Mali for years, a region considered as part of its sphere of influence. Historically, Algiers has long positioned itself as a traditional mediator of conflicts in Mali since 1991, when the Algerian mediation succeeded in bringing the opposition forces of the People's Movement of Azawad and the Arabic Islamic Front of Azawad (FIAA) to agree to the Tamanrasset Accord with the Malian government (Lacher 2013).

In recent years, the Algerian authorities have constantly sought to centralize the fight against terrorism by the creation, in April 2010, of a Joint Operational Staff Committee (CEMOC), consisting of representatives from Algeria, Mali, Mauritania, and Niger (Tamboura 2016). Located in Tamanrasset (South of Algeria), the CEMOC

planned to mobilize more than 25,000 combatants, including 5,000 Tuareg, in 2011, but this never materialised. For some military experts, the failure of the CEMOC is a result of inadequate security cooperation, such as intelligence sharing and joint patrols. In addition, the Operation Serval in Mali in spring 2013 was perceived by [159] Algiers as interference in its area of influence (Tamboura 2016). This section maintains that most efforts deployed by Algiers regarding the Malian peace process, as well as the fight against terrorism in the Sahel, was aimed at securing Algeria's regional hegemony, notably by keeping Western forces away from the region. Furthermore, complicated relations between France and Algeria have likewise affected the landscape of interventions (Boukhars 2012, 13). The creation of the G5 Sahel joint force has been at least in part a product of power-plays among the major regional actors. Although Algerian policymakers have not rejected the principle of wider regional cooperation, they have viewed attempts to bring Morocco into the CEMOC or other non-Sahelian organisations negatively, asserting that Morocco is not a Sahelian state with the fear that recognising Morocco as a Sahelian state would go against Algeria's stance on Western Sahara, which borders the Sahel.

Furthermore, Algeria and Morocco compete over regional leadership. Consequently, Algeria sees France and its regional allies, namely Morocco, as the biggest hurdle in its quest for regional dominance. The two countries have endured tense relations over a variety of issues, including the question of Western Sahara, which has hindered the prospect of close security and military cooperation between them (Boukhars 2012, 15). Furthermore, the long-standing competition between the two great regional powers, Algeria and Morocco, in and beyond the Western Sahara, has blocked regional security collaboration, not least the AU's role in managing the crisis (Zoubir 2018, 87).

In December 2014, the African Union launched its own regional peace and dialogue initiative known as the Nouakchott Process, which brought together eleven member states from across the Sahel and Maghreb in order to strengthen and coordinate security cooperation within the African Peace and Security Architecture

(APSA) in the Sahelo-Saharan region. Much like previous initiatives in the region, however, the effectiveness of the APSA was hampered by the persistent rivalries between its member states (Fejerskov, Ravnkilde, and Albrecht 2017, 49).

[160] Taking all these factors into account, and as Algerian scholar Zoubir (2018, 88) asserts, Algeria's reaction to the G5:

> Is very negative for two reasons: the first is that the feeling of having been double-crossed by France, especially after having created and financed the CEMOC and certain regional initiatives; the second is that it allows the lasting installation of foreign bases in the Sahel and blurs the cards by mixing up the armies of the region.

For Algerian policymakers and analysts, not only is France-sponsored G5 a non-African initiative, despite its depiction by international backers (France in particular), but it is also inconceivable that Algeria would join a force 'sponsored' by a non-African entity, France, Algeria's former colonial power. Algerians are very averse to alliances, especially military ones. While it pursues an incontestable fight against violent extremist organizations (VEOS), Algeria favours a peace process and a politically sustainable resolution to the conflict in the Sahel. This means linking security issues to development by promoting inclusive regional economic development, a lesson that Algerian authorities learned at a high cost from their own national tragedy in the 1990s. For that reason, Algeria is opposed to the idea of collaborating with foreign troops, especially French, in the fight against Jihadists. This could substantiate Jihadist ideology and propaganda of a war of 'infidels' against Muslims and thus, embolden the dormant VEOS in Algeria.

More importantly, Algeria is concerned that such intervention may inadvertently target the Tuareg, resulting in an intensification of the nationalist feelings and solidarity of the large Berber ethnic group across the region, thus jeopardising the Peace and Reconciliation Agreement for Mali. Similarly, Algeria is also concerned that a major French offensive in northern Mali could result in an incursion

of terrorist groups into Algeria, compelling Algeria to become militarily involved in the Sahel (Zoubir 2018, 88). At the same time, however, Algerian analysts surmise that, regardless of Algeria's reservations about the G5, Algerians will cooperate with this organisation through intelligence sharing and logistics, as it has done with Operation Serval and Operation Barkhane. Furthermore, Algeria already has military agreements with three of the five Sahelian states (Mali, Mauritania and Niger) in the G5 (Touré 2021, 16). [161]

ROLE THEORY AS A FRAMEWORK FOR ANALYSING ALGERIAN SAHELIAN POLICY

With regard to middle-power literature, role theory can capture the variety of roles taken by middle powers in the international order through specifically examining how both structure and material interests, as advocated by the position approach, as well as norms, championed by the behavioural approach, motivate them to pursue middle-power status. Moreover, it can also capture the political dynamics within the state, which also affect the status-seeking behaviour of middle powers, as suggested by the recent literature (Jordaan 2003, 166).

In fact, certain roles, such as coalition-builder, mediator and bridgebuilder, are highly associated with middle powers. However, other roles are performed by states in their pursuit of middle-power status. Therefore, the roles enacted to achieve middle-power status are different, not only between traditional middle powers and emerging middle powers, but also among emerging middle powers. Instead of differentiating middle-power behaviour based on a distinction between traditional and emerging middle powers, the variations in middle-power behaviour can best be understood by examining each state's role conception. Here, the notion of role conception can bridge the foreign policy agenda of states and their status-seeking behaviour in the pursuit of middle-power status. Rather than treating it as merely a function of material capability or good international citizenship, this article aims to show that middle-power behaviour is driven by role conceptions enacted by policymakers to play a more significant role in the international

order. Therefore, role conceptions could be an in-between link for middle powers' status-seeking behaviour and their foreign policy agenda. Doing this will provide a more nuanced explanation of middle-power behaviour, which might differ between one middle
[162] power and another (Cantir and Kaarbo 2012, 6).

With this position, Algeria is expected to play the role of an active regional leader. Under Tebboune's presidency, Algeria did not aim to carry out its role as a regional leader in the region per se, but further used its regional leadership role in the region to pursue middle-power status at the global level. Algeria's regional leadership has increased its leverage as a middle power in several notable forums (Arab Maghreb Union, Arab League, Organization of the Islamic Conference, African Union) as well as parliamentary, functional and international organizations, the United Nations and its agencies. Algeria has also assisted in implementing the AU Plan of Action on the Prevention and Combating of Terrorism by hosting and helping staff the Africa Center for Studies and Research on Terrorism (ACSRT),[2] which aims to guide and coordinate counterterrorism across Africa. In addition, Algeria has launched, separate from the African Peace & Security Architecture (APSA), its own security cooperation initiatives for the so-called *pays du champs* of the Sahel, such as the regional command for joint counterterrorism operations in Tamanrasset (Nickels 2014).

Building on Holsti's observations that states could play multiple roles, we can see that Algerian policymakers during the last two years are not reconfiguring Algeria's international roles in order to align Algerian foreign policy with its growing self-identification with middle-power status. Rather, its policymakers continue to perform Algeria's role as a regional leader by extending its scope into the global arena. Thus, although the conception as a regional leader began long before Algerian policymakers self-identified Algeria with a middle-power status, arguably since Tebboune's presidency, Algerian policymakers have utilised its role conception as a regional leader to strengthen its growing self-identification as a

[2] See http://caert.org.dz/fr/.

middle power. According to Holsti, the active independent role goes beyond the mere pursuit of an 'independent' foreign policy (Holsti 1970, 285). Instead, it emphasizes 'at once independence, self-determination, possible mediation functions, and active programs to extend diplomatic and commercial relations to diverse areas of the world' (p. 262). In Algeria, the ultimate strategy of the post-*Hirak* president, Tebboune, was to establish the country as an independent regional and international actor that has the ability to make decisions based on its national interests rather than based on the interests of other states. Moreover, the 'active' component of the role entails the expansion of relations with other states within and beyond the Sahel region. This active independent role is largely supported by President Tebboune, which points to the belief that Algeria must cultivate relations and develop economic and security cooperation with diverse regions of the world.

This role is clearly reflected in state documents as well as in Tebboune's various speeches from 2019 to 2022. Tebboune stressed in a periodic interview with the representatives of the national media the necessity for Algerians to be 'convinced that their country is a regional power,' warning against the attempts to 'minimize' Algeria's pioneering role, led by sides dictating behind the scenes through what is called the fourth-generation wars that aim to destabilize the country by exploiting its children' (Ghebouli 2021). He also expressed his desire to bolster Algeria's position and role in addressing regional crises (Bobin 2020). Under Tebboune, Algeria has notably expanded its political and economic relations with Italy, Germany, Russia, and Turkey, where the Algerian-Turkish strategic partnership has reached its 'golden age' in recent years. To some extent, the active choice to broaden Algeria's non-traditional engagements with other states provides more flexibility when engaging with its traditional allies (Toumi 2021, 47).

Algeria's stance in the Sahel can be interpreted as a way to manage the tension between its historical role and its current expectations. Algeria's historical role as a voice for developing countries, initiated by Houari Boumediene (1965–1978) during the formative years of its nation-building after independence, has caused it to

take a slightly oppositional stance towards the Western global order. Within the United Nations, Algeria voiced its criticism of the West-led liberal order, calling for reform of the liberal world order. Algeria's experience of rejecting colonialism through physical struggle has also played a significant role in making the spirit of anti-colonialism an integral part of Algeria's foreign policy objectives, which are enshrined in the preamble to its constitution. This historical role has consistently been translated into Algeria's stance in many international forums, such as the United Nations and the AU (Malley 1996, 132).

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While Algeria's role as active independent has increased under Bouteflika's presidency, its role as regional leader has was significantly reduced under his fourth term presidency (2014–2019) due to the perceived lack of benefit in taking on such a role (Daguzan 2015, 41). This also shows that a newer role conception enacted to pursue middle-power status, such as active independent, is less likely to be stable compared with a more institutionalised role, such as regional leader, which has become Algeria's historical role. As a result, under Tebboune, Algeria tends to voice a more revisionist stance based on its role as a regional leader driven by the altered expectations of the international community. Although Algeria is a putative middle power, it has been restrained by its focus on the regional level. This is evident from its persistence in taking the role of a regional leader in order to showcase its global outlook (Algeria Press Service 2020a)

Under the presidency of Tebboune (2019–present), the pursuit of middle-power status continues to be Algeria's foreign policy objective. In enhancing Algeria's middle-power status. Tebboune has focused on playing a greater role at the regional level (Algeria Press Service 2020b). However, Algerian policy makers' vision for the country's middle-power roles with a greater regional focus on the Sahel was primarily driven by three factors-namely, uncertainty about Morocco's rise as a regional balancer, countering the intraregional security threats and the impact of the great powers' rivalry in the region. Hence, in a strategic regional environment characterized by unbalanced multipolarity, growing Algerian activism can be attributed to Algeria's attempt to support peace and stability in

the Sahel, specifically in the context of an erosion of French hegemony in the region. In contrast, given the regional constraints, and in particular, the fragile regional security environment that hinders Algeria from playing a greater regional role in mediating the Libyan and Malian crisis, the notion of role conflict introduced by [165]
role theory can better explain why Algeria has moved away from its previously conceived middle-power role as a regional balancer. While self-identification with a middle-power status is still intact and more entrenched, the analysis of Algeria's role preferences in pursuing middle-power status shows how significant historical roles are in affecting role conceptions enacted in the pursuit of middle-power status. Role conceptions that are incompatible with historical roles are more likely to be abandoned or challenged by domestic discourse. Furthermore, the change in Algeria's role conception, from a heavy regional leader towards an active independent and vice versa, demonstrates that both historical and alter expectations are crucial factors that drive its role preferences as a middle power.

The Tuareg Question in the Algerian Security Approach: Testing Algeria's Middle-Powerhood

The Sahel has been a source of concern for Algeria for a long time due to a variety of reasons. Beyond the issue of terrorism, Algeria has been quite concerned about the turn of events regarding the Tuareg question and the situation in northern Mali after the collapse of the Gaddafi regime in Libya. The Tuareg question is not new, but there have been critical changes since autumn 2011. Colonial France's redrawing of African borders resulted in the dispersal of the Tuareg population throughout the Maghreb and Sahel regions. However, as scattered as they are, the Tuareg have been able to maintain some connections thanks to the seasonal movements (transhumance) across the region. Furthermore, in the late 1960s the Algerian government recognized the rights of its Tuareg population, which was resentful of Gaddafi, who nevertheless, had accepted the creation of training camps and encouraged the birth of a Tuareg independent movement as well as the establishment of an indepen-

dent Tuareg state as a way of exerting leverage over rival actors in the region, particularly Algeria. One of the significant consequences of the civil war in Libya was the massive return of the well-equipped and highly experienced Libya-based Tuareg to Mali and Niger in Au-
[166] gust 2011. Certainly, this has raised Algeria's security concerns as effective management of the Tuareg issue has always been one of the pillars of Algeria's strategy in the region, which explains why Tuareg aspirations for statehood have always been met with disapproval in Algiers. While Algerian policymakers empathize with Malian Tuareg, they regard Tuareg demands for autonomy or irredentism suspiciously. Unsurprisingly, regardless of this empathy, they reacted negatively to the proclamation of the National Movement for the Liberation of the Azawad (MNLA) of an independent state in northern Mali in April 2012 (Damme and Van 2015, 10).

Likewise, this standpoint is consistent with Algeria's policy against secessionist movements and any political, social or ethnic categories that could threaten the internationally-recognized national unity and territorial integrity of the state. Since the late 1960s, Algerians have succeeded in integrating their Tuareg population into the political process through the representation of notables in parliament, within the structures of the National Liberation Front (FLN) or by settling Tuareg populations in southern Algeria, providing them with the necessary modern means to improve their living conditions. Hence, any secessionist desires are seen as a threat to Algeria's own national security and territorial integrity. This explains why Algeria led the mediation process between the Tuareg in northern Mali and the central government in Bamako in the 1990s, 2006, and 2012 (Damme and Van 2015, 46). Algeria's opposition to foreign intervention derives from the position of its foreign policy as well as fears that intervention may strengthen jihadist ideology and consolidate secessionist sentiments in the region. The ideal scenario would be a political solution based on the separation of the Tuareg groups represented by the MNLA and Ansar Dine from AQIM and MUJAO (Movement for oneness and jihad in west Africa, al-Mourabitoun) (Boukhars 2015, 4). The rationale is that distinction would be twice as effective as addressing the Tuareg's demands and also prove to

be a fighting factor against terrorist groups, possibly with Tuareg assistance (Lounnas 2014, 816).

Furthermore, foreign intervention has the potential of destabilizing an already volatile region astride Algeria's southern borders. One of the premises of the state's policy toward the Tuareg is that governments in the region should address the socioeconomic, political, and cultural demands of their respective Tuareg minorities. In fact, it was partly the non-compliance of the Malian president, Amadou Toumani Touré, with the Algiers-brokered agreements between the Tuareg and the Malian government that triggered the events of early 2012, resulting in the debacle of the Malian army in northern Mali and the military coup that overthrew him (Bernard 2013, 22). Without doubt, the coup that plunged Mali into a political crisis compelled Algeria to reassess the management of its security along its southern borders and seek a peaceful resolution for the conflict (International Crisis Group 2012). It essentially aims to contain the effects of Azawad's search for independence among other Tuareg populations in Mali, Niger, Libya and Algeria. In addition, there is a fear that foreign intervention could lead to yet another influx of Malian refugees into Algeria, which already hosts about 20,000 Malian refugees that escaped earlier in 2013. Ever since France decided that military intervention was necessary to preserve its interests in the Sahel region, Algeria has sought to convince its African partners to re-establish Mali's territorial integrity through dialogue with the Tuareg (Chikhaoui 2017). [167]

In his interview with *Le Figaro,* in February 2020, President Tebboune stated that 'the Accord d'Alger was almost perfect'[3] and was 'the only possible way that the south of Mali could integrate northern Mali in its structures and institutions' (Portes and Matarese 2020). Actually, this declaration mirrors a long-standing policy towards the Sahel region; a policy not new in the history of Algeria

[3] Accord for peace and reconciliation in Mali emanating from the Algiers process, the peace agreement was formally signed on 15 May 2015 by the Government of Mali, the Platform and two groups forming part of the CMA. The remaining CMA groups signed the accord on 20 June 2015 (Wiklund and Nilsson 2016).

that referred to Boumediene ideas in foreign policy, in an attempt to reprise the same political strategies adopted during the Boumediene era, which became the cornerstone of the renewed official Algerian foreign policy doctrine. Yet, after his election in December 2019,
[168] president Tebboune has tried to reinvigorate Algeria's 'neighbourhood first' policy, in part to counteract the complex neighbourhood threats and reaffirm its regional role, given its geographic position as a resident power. By the same token, some Algerian analysts have advocated for Algeria to alter its Sahelian policy due to shifts in the regional and domestic security environment (French military withdraw in late 2021, and the ongoing political crisis due to the putsch in Mali on May 2021, which is the third coup d'état in ten years after 2012 and 2020).

RESHAPING THE SAHEL: WHAT FUTURE FOR THE ALGERIAN ROLE?

After the nationwide protests in February 2019, which resulted in Bouteflika's decision to step down, an election was eventually held on 12 December 2019, where Abdelmadjid Tebboune, a former prime minister, was elected president. The economy remains highly dependent on hydrocarbons, which represent 98 % of total exports and roughly 60 % of the government's revenues. This wealth has allowed Algeria to invest in its security sector – it has the largest military budget in Africa – and the Algerian government aims to improve its equipment and develop strong capabilities in the field of counter-terrorism (Achy 2013, 23). The Algerian Department of Intelligence and Security[4] is regarded by some as one of the 'most effective intelligence service when it comes to fighting al-Qaeda in the Sahel' (Schindler 2012). Although some also point to the unorthodox methods used by the DRS in counter-terrorism activities, including the infiltration of terrorist groups (Schindler 2012), Algeria's delib-

[4] Algerian President Abdelaziz Bouteflika has dissolved the DRS (Département du Renseignement et de la Sécurité) on January 2016. The DRS was replaced by the Department of Surveillance and Security DSS which, unlike its predecessor, report directly to the presidency as the entire security and intelligence apparatus.

erately uncompromising counter-terrorism policy derives from the country's experience of internal armed conflict during the 1990s. The war between the Algerian military regime and armed Islamist groups is estimated to have cost 200,000 lives, and it has shaped the North African state's approach to fighting terrorist groups. This [169] experience has made Algeria a key ally in the fight against terrorism in the Sahel for the US and many EU countries, such as France, since the early 2000s. Examples of counter-terrorism collaboration include the 2002 Pan Sahel Initiative – which became the Trans-Saharan Counterterrorism Partnership in 2005 – currently coordinated by the US military Africa Command (AFRICOM), based in Stuttgart (Zoubir 2009, 995).

Algeria has also been part of important regional initiatives aimed at fighting terrorism. Among these is the decision taken in April 2010 by the four countries most directly affected by al-Qaeda in the Islamic Maghreb (AQIM) – Algeria, Mali, Mauritania and Niger – to create the Joint Operational General Staff Committee (CEMOC) (Arieff 2012, 2), based in Tamanrasset in South Algeria, 400 km from Algeria's southern border. Its purpose is to ensure better cooperation among these countries in the fight against terrorism, kidnappings and trafficking, and the conduct of joint operations in each of the participating states. In September 2011, an international conference on the fight against terrorism in the Sahel was hosted by Algeria, with the aim of further strengthening cooperation among the participating countries.

By 2019, JNIM (Jama'at Nusratul Islam wal Muslim), a merger of jihadist groups formed in March 2017, was launching attacks throughout the Sahel, while ISGS (Islamic State in the Greater Sahara)[5] expanded and did likewise throughout the region as well as against Algeria, something JNIM had refrained from doing. At the same time, Mali continued to disintegrate, and after years of endless war, France announced that it was withdrawing from Mali.

[5] A jihadist movement led by Abu Walid al-Saharawi perpetrated attacks against the military and civilians in Mali, Niger, and Burkina Faso, and pledged allegiance to the self-proclaimed Islamic State (ISIS) in 2015.

While the start of the *Hirak* initially meant the total disappearance of Algeria from the Sahel, the December 2019 election of president Tebboune changed this. He instantly made it clear that Algeria was to return to the regional and international scene starting with the
[170] Sahel (Lounnas 2021, 34).

Recent years have witnessed a retreat in Algeria's presence in the Sahel region. Moreover, the previous crises since the collapse of the state in Libya and its failure in Mali, then French military intervention (Operation Serval) and French combat operations (Operation Barkhane) brought about a delayed and lower-level engagement from Algeria. However, Algeria's tolerance for risk in the region appears to have limits. In fact, the shifts in the regional security environment presents the greatest challenge. Shortly after an internal political struggle, and constitutional and institutional reforms in the aftermath of the nationwide protest movement *Hirak* in 2019, the new President's administration intervened intensely and immediately, in Mali, Niger and Mauritania through periphery (or neighbourhood) diplomacy. This included managing bilateral relations through leader-level diplomacy, most prominently during two formal state visits to Algiers with the President of Niger in July 2021 (Algeria Press Service 2021b) and the President of Mauritania in late December 2021 (Algeria Press Service 2021a).

In response to concerns about Mali, President Abdelmadjid Tebboune rapidly sent his Foreign Ministers to Mali in the aftermath of the putsches in 2020 (Charfaoui 2021) and 2021 (Ministry of Foreign Affairs and National Community Abroad 2021). Thus, Algeria shows it is keen to always have the upper hand in favour of progressing the ongoing peace process in Mali by encouraging local peace and stability initiatives. Previously, Algerian efforts had been confined to supporting, mediating, and facilitating rather than taking on a strong leadership role in achieving, sustaining and enforcing peace. Indeed, although the conflict in Mali has preoccupied the Algerian security landscape over the past ten years, the French withdrawal will create geostrategic opportunities for a growing Algerian role in the Sahel region.

While French withdrawal could benefit Algeria, it could also es-

calate the terrorist threat in Mali, increasing political fragility and instability, and ultimately threatening Algeria's economic, security, and strategic interests in the region. Nevertheless, apart from a few narrow exceptions related to limited military interventions and strategic access, Algeria has always expressed wariness about getting bogged down in regional conflicts. It does, however, seek to increase its political influence across the Sahel region using all the tools at its disposal, from cross border economic cooperation with Niger, Mali and Mauritania to boosting these states' counter terrorism capabilities.

THE ALGERIAN MILITARY DOCTRINAL SHIFT: WHAT WILL BE THE IMPACTS ON THE STATE ROLE IN THE REGION?

For several years, Algeria remained reluctant to send troops abroad, because of its fear of their men being turned into auxiliaries of a major power, which is a significant constraint on its aspirations for a prominent regional role (Ghilè and Kharief 2017, 35). Algeria has been absent from the French-led Barkhan operation against Mali insurgents since 2012 for obvious reasons. It has also not participated in the African anti-terrorism force, which includes five African armies collaborating on security issues in the Sahel and Sahara region with French help. Algeria has found itself marginalised due to its refusal to let its army deploy outside its territorial borders in conformity with the country's constitution (Blidi 2020).

Consequently, Algeria intends to redraw the operational borders of its army, through a proposal within a draft of a constitutional amendment, which would allow sending military units to participate in peaceful and combat missions abroad. Still, article 29 from the current constitution states that 'Algeria shall not resort to war to impinge on the legitimate sovereignty and the freedom of other peoples. It shall endeavour to settle international differences through peaceful means.'[6] Moreover, another paragraph was added to this

[6] Article 29 of the people's democratic republic of Algeria constitution 2016 (https://www.constituteproject.org/constitution/Algeria_2016?lang=en).

article stating: 'Algeria within the framework of the United Nations, the African Union and the Arab League, and in full compliance with its principles and objectives, can participate in peace-keeping and restoration operations.' This proposed amendment is a shift in the
[172] Algerian military doctrine that, since the 1970s, has prevented sending military units abroad, according to a constitutional text (*Asharq Al Awsat* 2020). Under the proposed amendments by a committee of experts, the 'geographical area' of the tasks of the Algerian army will be presented for public discussion for the first time in decades, with the possibility of adopting a comprehensive review of the current principles that prevent its participation in any operations outside the country's borders.

While analysts considered that changing the combat strategy of the Algerian army is a necessity dictated by regional circumstances, the Algerian army has not fought combat operations abroad since the wars of the Middle East against Israel in 1967 and 1973. Indeed, this would be a major doctrinal shift in the country's approach to military and diplomatic issues (Echoroukonline 2020). Furthermore, many experts argue that the shift towards a fundamental review for the role of the Algerian army outside the border is a required 'adaptation' to a troubled neighbourhood (Khalid 2015). The importance of this doctrinal change is based on several reasons: protecting Algeria from the dangers of terrorist organizations in bordering countries, enhancing its diplomatic role, and the effectiveness of its foreign policy. The amendment also serves the vital interests of Algeria by building defensive policies based on bilateral agreements with adjacent countries, especially in the area of combating terrorist organizations (Dekhakhena 2021, 100). Given these facts, the 'new' doctrine adopted in 2020 emphasized strategic deterrence, and was also a message that Algeria can invoke military power with its neighbours in case of a crisis. This doctrinal change, however, was not a radical departure from the predecessor doctrine.

In this sense, the recent military doctrine was just an adjustment aimed at increasing the operational efficiency of the Algerian army and was not a major change that required the abolition of existing organizational structures and forms of operations. Hence, this

latest doctrine is designed to provide new improvements and adjustments to Algeria's predecessor doctrines. Hence, the constitutional amendments hint that Algiers has learned lessons from its mistakes in Libya since 2011 and would now allow it to be more proactive if another conflict erupted in a neighbouring state. Among [173]
the neighbouring countries that Algeria shares its borders with are Mali, Niger and Mauritania, all considered to be fragile states, likely to erupt in conflict. In such a scenario, Algeria could now intervene to deter potential threats or third-party military adventurism. Algeria's rivals may now more carefully weigh up their options and the potential consequences when it comes to intervention or interference either in its direct neighbourhood, or whenever its allies are under threat (Ghanem 2020). Studies have shown that perceptions are critical in the success or failure of deterrence efforts. In fact, deploying considerable military power directly in the path of state and non-state actors would not only break the predictability of Algeria's foreign policy, but also send out a loud and clear message. Considering its diplomatic history, military power and regional ambitions, this shift could permit Algeria to effectively perform its self-proclaimed role as a powerbroker and regional stabiliser – the first key step towards a shift in its foreign policy that is more in tune with Algeria's desire to be acknowledged as a regional security provider (Ghanem 2020).

CONCLUSION

The African Sahel is an extremely strategic region for Algeria and one in which it has always played a major role. In fact, the importance of the Sahel region extends beyond local and regional concerns as well. Hence, the Sahel security issue is not only closely related to the security of the Maghreb and West Africa, but also serves as a lever in determining Algeria's geostrategic role. Needless to say, the fragile security situation in the Sahel coupled with political instability, weak governances and the transnational threats created a need for adaptation in the Algerian security approach towards the region, including a militarization of borders, which is neither expected nor desired. In particular, the outbreak of crisis in the Malian state in

2012 was unprecedented, involving for the first time, not only Tuareg movements fighting against the Malian government, but also terrorist groups. A new security reality had arisen in the Sahel region, creating a new challenge for Algeria, which has adapted to re-
[174] spond to growing threats.

This mirrors Algeria's approach to the Sahel region under the leadership of Tebboune and Algeria's strategic priorities for the region, which have been fairly constant through different national political systems. As for the Malian case, since the Sahel is considered by Algeria as its traditional backyard of influence, it has participated in all negotiations of Malian conflicts since the rebellion in the 1990s with Algerian diplomatic efforts succeeding many times in bringing the opposition forces to agree to the peace accords with the Malian government. Furthermore, it is likely that Algeria will continue to exploit its historically unbiased diplomatic weight, while hinting at the possibility of militarily intervening to protect its national security. Ultimately, it appears that Algeria seeks to maintain the same distance from all parties in relation to conflict, both locally and regionally. Likewise, Algeria's military intervention outside its borders and its scope depends on the nature of the threats to the security of its borders and its national security in general. In the absence of state threats such as a large-scale (regional) war, it is likely that Algeria – if it intervenes militarily – will be satisfied by penetrating short distances outside its borders, either to hunt down terrorist groups or to protect the tribes living on the edges of its borders, and thus prevent them from becoming rear bases for these groups. As for the possibility of participating in a multinational peace force, it will remain an option depending on the calculations of benefits and costs for Algeria's national security.

In conclusion, Algeria, as a regional leader, should strengthen its capacity development and regional cooperation through multilateral cooperation with neighbouring countries. Therefore, Algeria, with the most powerful military in the region, needs to be more active in the development and establishment of security cooperation and anti-terrorism mechanisms at the level of the African continent and the Sahel region. It is also necessary to accommodate

the needs of neighbouring countries, which simultaneously could reduce markedly the justification for external intervention in the Sahel.

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IJEMS | SCIENTIFIC ARTICLE

Status of Fisheries in Gaza Strip: Past Trends and Challenges

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This paper comprehensively portrays fisheries' past trends and current status in the Gaza Strip, relying on the literature review and own data collection. Gaza is a politically contested territory that has not been the subject of a targeted analysis with the view to shaping measures for more effective fisheries management. In order to contribute to this, the article first discusses gaps that may impede effective management and then highlights future challenges. Total seafood production has grown steadily overall in the last 15 years due to the rapid growth of aquaculture alongside an increase in fisheries production (87%) from 1995 to 2020. The fishing fleet of the Gaza Strip increased by 269%, from 647 motorized vessels in 1995 to 1741 vessels in 2020. Gillnets, trammel nets, longlines, purse seine nets, and driftnet were the fishing gear most used by motorized vessels, followed by trawlers. Despite efforts through national legislation to address fishery management problems, weak enforcement, low compliance, and unregulated fishing remain a serious challenge. Fisheries stakeholders, including funders of development aid to Gaza, have to consider the

social and political context of these fisheries when developing suitable management strategies.

Key Words: fisheries, aquaculture, Gaza, fisheries management, subsistence fisheries

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INTRODUCTION

The Food and Agriculture Organization (FAO) of the United Nations works to achieve food security for all, ensuring people have regular access to enough great quality food to live dynamic lives. The fisheries and aquaculture sector contribute considerably to food security and nutrition, particularly in some of the world's most food-limited areas, while at the same time, supporting the income of hundreds of millions of people everywhere in the world. To save these incomes for present and coming generations, constant attention to the sustainable use of natural resources is required (FAO 2020).

Most of the world's fish production comes from developing countries (e.g., tropical fisheries). In many of these countries, management methods are used that do not comply and are not eligible for the formal stock evaluation procedure (Griffin and Mahon 1997). The same fisheries management approaches are often attempted to be used in developing countries, leading to mismanagement of some of the related fisheries (Ruddle and Hickey 2008). For example, the model of a marine protected area (MPA) was seen as traditionally and socially defective and unsuitable in some developing countries (Ruddle and Hickey 2008) and is only gradually being adjusted to promote the sustainable use of natural resources and promote ecosystem services (Hill et al. 2016). An effective co-management with local communities is needed all the more since some of these countries have limited resources for imposing rules and guidelines inside the MPA, which then leads to weak compliance (Samy-Kamal, Sánchez Lizaso, and Forcada 2011). A key factor contributing to their ineffectiveness and the status of 'paper parks' is non-compliance with the rules in place (Mora et al. 2006; Guidetti et al. 2008; Rife et al. 2013; Advani et al. 2015).

Part of the Palestinian Authority, the Gaza Strip (or Gaza), is located at the southeast corner of the Mediterranean Sea, but separated from the other part of the Palestine-West Bank. The area is mostly ignored as a specific subject of study in Mediterranean regional fisheries management, despite occupying 42 km of coast and [181]
contributing to the fishing pressure in the area. In efforts to support the development in Gaza, several international sponsors and partners are working to promote the fisheries and aquaculture sector here. The European Union (EU) and the German Agency for International Cooperation (GIZ) supported the development of blue economy analysis in the Gaza Strip, and the Food and Agriculture Organization (FAO) has a long history in fisheries sector development in Gaza. Recently, FAO started a marine cage aquaculture pilot project with financing from the Italian Development Cooperation. The Japan International Cooperation Agency (JICA) has also supported the aquaculture sector's capacity development via training programs conducted in Indonesia and Egypt. At a regional level, the Gaza Strip and West Bank are involved in scientific and institutional cooperation to support accountable fisheries in the Eastern Mediterranean, supported by FAO, EU, Italian Ministry of Agriculture, Greece Ministries (The World Bank 2020). Sustainable fisheries development and improving the value-chain of fisheries and aquaculture sectors have the potential to increase more job opportunities and economic development activities.

So far, few studies have been published on the state of fisheries and aquaculture in Gaza. To contribute to increasing the socioeconomic benefits of the fisheries sector, while enabling progress on ecological sustainability, this article presents and examines the fisheries and the fisheries sector in Gaza. Previous studies (Abd Rabou 2013; 2019; Abu Amra 2018; Shaheen 2016; Abudaya, Harper, and Ulman 2013; MENA 2001) studied the current status of the marine fisheries and aquaculture sectors in a simplified and concise manner. However, most of them tended to be poor in recent data related to both sectors. The General Fisheries Commission for the Mediterranean (GFCM) is working with the Palestinian Ministry of Agriculture and the FAO office in Palestine to scale up marine fisheries and

aquaculture development to contribute toward the creation of new jobs, the improvement of livelihoods and the recovery from the recent social and economic influences (FAO 2022). The present article provides the first attempt to offer a comprehensive written account
[182] of the Gaza fisheries sector.

The analysis relies on data gathered from the index and non-index published articles, unpublished reports, questionnaires, interviews with the Directorate of Fishery and fishers' staff, and related institutions and organizations. A methodical search was conducted to attain pertinent literature relating to fisheries in Gaza. Some of the data were attained through a predefined search in Google Scholar: (search terms: fisheries in Gaza, Mediterranean fisheries, aquaculture in Gaza, etc.). Results of the study were not limited to texts available only in English or peer-reviewed journals, but was also extended to Arabic reports and un-indexed journals. The data on fisheries landings and fishing effort characteristics found in the collected data spanning from 1995 to 2020 was collated by that held by the General Directorate of Fisheries (DOF) in the Ministry of Agriculture (MOA) (and included published and unpublished reports), the organization responsible for managing Gaza's fisheries, and by FAO statistics. Additionally, interviews and questionnaire surveys with the fishers and related stakeholders and organizations, as well as with related institutions in the Gaza Strip were conducted to amend the statistics.

The general goal of this paper is to outline the status of fisheries in the Gaza Strip, as well as to identify the main gaps related to fisheries management. The paper is made up of three segments: (i) the first reports on the main characteristics of fisheries and aquaculture, including total production trends; trends in landings per species, trends in landing per gears used; catch composition, fishing effort, and socio-economic aspects, where existing knowledge is particularly poorly documented; (ii) the second part provides an overview of the management regulations and analyses their weaknesses in promoting effective management;(iii) based on the findings, key starting points for the management of the Gaza Strip fisheries are discussed in the third segment.

KEY FEATURES AND TRENDS IN THE FISHERIES SECTOR

The Gaza Strip is a narrow part lying along the south-western portion of the Palestinian coastal plains, located between longitudes [34° 20' and 34° 25' east] and latitudes [31° 16' and 31° 45' north], [183]
its area about 365 km². The length is approximately 42 km on the western Mediterranean coast, and the width varies from 6 km to 12 km. The Sinai desert is situated in the south, the Naqab desert in the east, and the Mediterranean Sea in the west (Aish 2013). The population density in the Gaza Strip is measured to be high compared with other areas in the world (5,936 persons/km²), with a population of 2.1 million people and a growth rate of 2.8% at the end of 2021 (PCBS 2019). Gaza is found in an arid to semiarid country; all the rainfall takes place between October and April. Average rainfall ranges between 400 mm/yr in the north and 230 mm/yr in the south (https://water.fanack.com/palestine/climate-and-rainfall/). The fisheries sector in Gaza is divided into two parts, namely the marine fisheries and aquaculture, and they are described as follows:

Marine Fisheries

The fishing zone of the Gaza Strip is locally known as the area along the coast that stretches up to 20 nautical miles (nm) offshore, but due to political instability, not all of these waters are being used for fishing. The fishing area has largely been dictated by the Israeli authority's imposition of rules on Gaza. At its best, the fishing zone in the Gaza Strip fluctuates between three and six nautical miles and rarely exceeds that.

Initially, in 1994, the fishing area was divided into three different maritime activity zones, named K, L, and M; zones K and M are border buffer zones, zone K being situated between Gaza and Israel (20 nm offshore and 1.5 nm wide), and zone M between Gaza and Egypt (20 nm offshore and 1 nm wide), while fishing is restricted within these zones. Zone L extends 20 nm offshore and is open to fishing by fishers from the Gaza Strip according to the 1994–1995 Oslo agreement. However, as Israel has repelled the implementation of this agreement, fishing was further limited to within 12 nm, re-

ducing the total fishing area to about 660 km² (Melon 2011). Israel's administration has been gradually confining Gaza fishers to access the sea, particularly after the second uprising (in 2000). In 2006, the fishing zone was further reduced to 6 nm. Following the Israeli op-
[184] eration (2008–2009), Israel banned Gaza fishers from functioning beyond a distance of 3 nm from shore, in that way preventing them from accessing 85% of the maritime area they are allowed according to the 1994 Gaza-Jericho Agreement (Melon 2011), also leading to conflicts between Gaza fishers and the Israeli Navy (Akram and Rudoren 2012).

The restrictions lasted until December 2012, and after the intervention of several international organizations, the fishing zone was increased back to 6 nautical miles. This continued until March 2013 when fishing boundary were again returned to 3 nautical miles until May 2013, shifting back to an area of 6 miles until October 2016. In November 2018, the fishing area's capacity returned to 9 nautical miles, with the southernmost point being Wadi Gaza and the northernmost point close to the Israeli border being 6 miles. The permitted fishing zone has now been extended to 9 miles from the northern side close to the Israeli border to the Wadi Gaza side, 12 miles from the wadi Gaza side to the central area, and 15 miles from the central area to the southern side of the Gaza Strip close to the Egyptian border.

Over the past two decades, the Israeli military has gradually increased the restrictions on access to the fishing areas along the Gaza strip coast. Since early 2009, Gaza fishers have been largely prevented from accessing the waters beyond 3, 6 and 9 nm from shore. Thus, Gaza fishers are now prevented from accessing around 50 to 85% of the maritime areas they are entitled to access according to the Oslo agreements. On the other hand, the spatial restriction enforced on Gaza fishers may have served as a de-facto no-take marine reserve, and thus may have the potential to enhance longer term stock status and stock productivity (Abudaya et al. 2013). This fluctuation in the fishing area distance is due to the complex security situation in the Gaza Strip, where the restrictions imposed on the fishing area are constantly changing, and which has a significant im-

pact on the landing process and the fishing fleet operating in the area.

The fisheries sector in Gaza has played a significant role in food security and is a lively source of employment. Presently there are 3,982 registered fishers in the Gaza Strip. This implies about 27,874 [185] people directly rely on fishing for their livelihood. Seeing the total population in the Gaza Strip is approximately 2.1 million people, almost 7% of the population depends on the fisheries sector. Generally, the number of registered fishers has increased from 1,600 in 1995 to 2,305 in 2001; 2,750 in 2007; 3,606 in 2016; and 3,982 in 2020. Most individuals working in the fisheries sector are deprived. According to the DOF in the MOA, about 90% of the fishers live below the poverty line. At present, fishers live with less than (200–250 US$) a month. Per capita income from fishing has decreased from (450–900 US$) before 2007 to less than (200–300 US$) in 2020. In the nineties, owners of large vessels, such as trawlers (locally called Gar) and Purse seine (locally called Shanshula), preferred to work in fishing as it was better than working in other sectors – which is not the case anymore. It was reported that in Gaza, the unemployment rate is beyond 50% while the poverty level has reached 53%, even though the maximum number of people categorized as poor take aid from the government and international organizations. Gaza is gradually becoming very difficult to live in under the worsening socioeconomic circumstances. In 2018, its local economy was constricted by 7%, leading to a 10% decrease in its per capita income (UNCTAD 2019). The study area includes four fish landing sites from the north (1) Gaza city fishing port, (2) the Deir Al-Balah landing site, (3) the Khanyounis landing site, and (4) the Rafah landing site.

Aquaculture

Fish farming operations are considered one of the most important economic activities in the Palestinian territories. A study previously noted that there are about five fish farming projects working in the governorates of the Gaza Strip. Five planted fish species have been cultured, including Oreochromis hybrids (Red Hybrids Tilapia), Oreochromis niloticus (Nile Tilapia), Sparus aurata (Gilt-

head Seabream), Mugil cephalus (Flathead Grey Mullet) and Clarias gariepinus (African Sharp Tooth Catfish) (Shaheen 2016). Fish farming is an essential source of income in light of the limited employment opportunities provided by the Palestinian private sec-
[186] tors. Many investors have twisted to fish farming operations in the coastal area of the Gaza Strip. Aquaculture farms use saline water from the onshore wells as the primary water source and release the wastewater to the sea during the water exchange and harvest, basically without any treatments. At present, two main aquaculture farms are functioning in Gaza, called Al Bahar farm and Fish Fresh farm.

The Al-Bahar farm area is about 16,000 m^2 and was established in 2014 in the Gaza Governorate. The fish farm (31° 29' 22.02' N, 34° 24' 6.8394' E) is located near the beach of Gaza and receives about 13,440 m^3 of marine salty water from beach wells. The farm is semi-intensive, consisting of 30 cylindrical ponds used for overfeeding and hatchery purposes. The ultimate water discharge takes place via manholes direct to the sea. The farm workers examine the ammonia level and salinity in the pipes to ensure that the water is suitable for fish farming and use copper sulphate to combat fish diseases in the ponds. The Fish Fresh farm area is about 32,000 m^2 and was established in 2009 in the Rafah Governorate, which lies in the southern Gaza Strip. The fish farm (31° 20' 37.6074' N, 34° 14' 44.1954' E) is located near the beach of Rafah and receives 28,800 m^3 of marine salty water from beach wells. The farm is semi-intensive, consisting of 25 cylindrical ponds used for overfeeding purposes. The water supply comes through beach wells. Qualified workers measure ammonia, dissolved oxygen, temperature, and salinity levels in the pipes. No sterilization methods are used inside the farm to control fish diseases.

STATUS OF FISHERIES IN GAZA

Total Production Trends

Up to 2005, marine fisheries were the primary sources of national production in Gaza, around 2683tons annually. However, aquaculture production has grown rapidly during the last decade, but is not

TABLE 1 Statistics of Marine Aquacultures Fish Production from 1997 to 2020 in Gaza

Year	(1)	(2)	Year	(1)	(2)	Year	(1)	(2)
1997	3790	–	2005	1813	–	2013	2421	232
1998	3620	–	2006	2323	17	2014	2858	150
1999	3665	–	2007	2702	37	2015	3101	300
2000	2600	–	2008	3243	65	2016	3306	350
2001	1950	–	2009	1855	115	2017	3129	435
2002	1507	–	2010	1724	130	2018	3038	650
2003	1507	–	2011	1403	159	2019	3795	650
2004	2952	–	2012	1938	257	2020	4660	750

NOTES Column headings are as follows: (1) marine production (tons), (2) aquaculture's production (tons). Based on unpublished DOF data.

reflected in the annual national production growth rate. The total national output has increased steadily in the last ten years. Between 1997 and 2008, fish catches have varied from a maximum of 3,790 tons in 1997 to a minimum of 1,507 tons in 2003, depending mainly on the political situation and partly on the quality of the biannual sardine seasons. Although in 2005 and 2008 there was a steady increase from 1,814 to 2,845 tonnes caught, the reduction in Gaza's fishing zone to 3 NM has dropped the fish catch to 1,525 tons in 2009. By 2011, the fish catch decreased further to 1,492 tons, while in 2020, the fish catch increased further to 4,660 tons. Despite its modest fishing industry, Gaza's fisheries sector is a significant source of employment, income, and a supply of high-protein food for the Gazans. The incorporation of fish into the Gazan diet, and the large source of protein it represents, is limited by seawater contamination through untreated sewage, lack of fuel to operate boats, and the ongoing limitation of fishing grounds. According to the statistics of the MOA in 2015 and 2020, the volume of Sparus aurata (Gilthead Sea Bream) production reached 220 tons; in 2016, the production was 350 tons; in 2017 the production was 435; and as the production of Sparus aurata (Gilthead Sea Bream) in 2019 and 2020 reached 650 and 750 tons respectively, the production was recorded at 159 tons in 2011, showing that fish production from aquaculture farms is on the increase (table 1).

Trends in Landings per Species

According to the study conducted by the World Bank, the main landing fisheries species in the Gaza Strip are small pelagic fisheries of Engraulis spp. and Sardina Spp. Other larger landed fisheries
[188] species are Pagellus Erythrinus among demersal fisheries, Protuns Spp. among crustacean, and Loligo Spp., Octopoda, Sepia spp., or Nautiluses among the Cephalopod class. In the Gaza Strip, there is no systematic recording of fish landing amount nor fish stock assessment. A stock assessment of the Sardinella aurita, among the pelagic fisheries, and the Saurida undosquamis, amongst the demersal fisheries, was conducted in 2018 and 2019, respectively, together with a joint effort of the DOF and FAO. The most important types of fish caught in the Mediterranean Sea along the Gaza Strip coast were identified during this study. This was conducted by distributing a questionnaire to the fishers and the owners of the used fishing vessels. Besides this, data were collected from the DOF and reports published online. The findings of these stock assessments demonstrated over-harvesting, with the stock of Sardinella aurita being moderately over-harvested and the stock of Brushtooth lizardfish (Saurida undosquamis) highly overexploited (World Bank, 2020). Table 2 shows the landed fish per species in the Gaza Strip from 2018 to 2020.

Trends in Landings per Gears Used in Fishing

The DOF collects landed fish data by (i) trawling gear by trawlers, (ii) purse seining gear by large purse seiners (Shanshulas), (iii) purse seining gear by Hasakas with motors, (iv) longline gear by Hasakas with motors, (v) driftnet gear by Hasakas with motors, and others. There are two main fish catch seasons throughout the year, including the spring season, which starts from mid-March and ends in the middle of June, while the second autumn season begins from the beginning of September and ends in November. The high fishing season is May, and the low fishing season is from November to March. According to our knowledge, there are no observers on vessels; thus, the landed fish and estimated catch fish are not the same. There are slight variations in the recorded data.

TABLE 2 Overall Landed Fish per Species in the Gaza Strip

Species	Group	2018	2019	2020
Engraulis spp. (Anchovies)	Pelagic	562.2	974	945
Sardina spp. (Sardines)	Pelagic	480.2	549	636
Protuns spp. (Swim Crab)	Crustacean	442.4	511	572
Scomber scombrus (Atlantic mackerel)	Pelagic	221.7	266	326
Auxis rochei (Bullet tuna)	Pelagic	137.4	161	187
Loligo spp. (Squid)	Cephalopod	134.2	151	171
Penaeus spp. (Prawn)	Crustacean	129.2	145	156
Etrumeus spp. (Round herring)	Pelagic	91.6	110	140
Siganus spp. (Pinspotted Spinefoot)	Demersal	82.5	102	121
Trachurus spp. (Atlantic horse mackerel)	Pelagic	68.9	86	112
Pagellus erythrinus (Common Pandora)	Demersal	66.9	82	108
Scomberomorus spp. (Spanish mackerel)	Pelagic	64.2	80	98
Sillago sihama (Northern whiting)	Demersal	51.2	64	75
Saurida undosquamis (Brush. lizardfish)	Demersal	46.9	59	72
Other species		459.6	455	941
Total		3039.1	3795	4660

NOTES In tons. Based on unpublished DOF data.

Landed Fish by Trawling Gear (Trawlers). Almost 35-50% of trawler catches are Protuns spp., and about 15% of trawler catches are Penaeus spp. Trawlers also catch squid, Spanish mackerel, common Pandora, Brushtooth lizardfish, and red mullets. The main target is prawns due to their high value. Most of the landed prawns are already packed in boxes in the trawlers. Upon arrival at the fishing port of Gaza city, they are transported to the West Bank and some high-end restaurants in the Gaza Strip. If the checkpoint is not open, landed prawns are kept at cold storage at Al-Tawfeek Cooperative (TC) or traders. Meanwhile, other landed catches, including swim crab, are mostly sold at local markets in the Gaza Strip. Table 3 shows the landed fish by trawlers in the Gaza Strip from 2016 to 2020.

Landed Fish by Large Purse Seining Gear (Shanshulas). The large purse seine gears used by Shanshulas target small pelagic fish. Engraulis spp. and Sardina spp. are the main fish, as well as Trachurus spp. and Etrumeus spp. With Engraulis encrasicolus from spring to autumn and Sardina spp. from autumn to spring, Shanshulas can catch small

TABLE 3 Landed Fish by Trawlers

Species	Group	2016	2017	2018	2019	2020
Protuns spp. (Swim Crab)	Crustacean	271.19	279.38	392.75	400.34	425.40
Penaeus spp. (Prawn)	Crustacean	115.01	100.81	127.41	122.46	146.37
Loligo spp. (Squid)	Cephalopod	46.34	35.13	50.15	46.67	64.16
Scomberomorus spp.	Pelagic	48.02	47.14	47.96	54.03	61.64
Pagellus erythrinus	Demersal	60.21	42.02	46.07	52.01	62.06
Saurida undosquamis	Demersal	9.80	14.06	33.75	34.17	44.93
Mullus spp. (Red mullets)	Demersal	35.42	22.43	26.88	29.64	39.23
Sillago sihama	Pelagic	10.30	7.60	16.51	17.21	32.21
Sphyraena Chrysotaenia	Pelagic	9.61	15.72	14.34	15.94	23.42
Sepia spp. (Cuttlefish)	Cephalopod	21.60	12.90	8.52	10.12	25.21
Other species		100.41	62.14	50.48	66.73	117.88
Total		727.92	639.33	814.82	849.32	1042.51

NOTES In tons. Based on unpublished DOF data.

TABLE 4 Landed Fish by Large Purse Seining Gear by Shanshulas

Species	Group	2016	2017	2018	2019	2020
Anchovies	Pelagic	821.10	528.25	368.06	488.51	539.77
Sardines	Pelagic	401.41	148.74	177.59	234.96	253.92
Scomber scombrus	Pelagic	131.97	110.36	163.12	216.37	245.62
Etrumeus spp	Pelagic	22.15	27.45	89.29	118.14	126.94
Loligo spp	Cephalopod	36.19	33.12	48.83	64.82	71.41
Auxis rochei	Pelagic	51.16	73.29	39.83	51.77	55.54
Trachurus spp	Pelagic	37.10	35.59	29.29	25.02	32.19
Other species		90.33	182.13	165.89	235.54	262.17
Total		1591.41	1138.93	1081.90	1435.13	1587.56

NOTES In tons. Based on unpublished DOF data.

pelagic fish throughout the year. The fishers raised concerns regarding the decline of fish catches in past years and recognized regional and local issues. As small pelagic fish migrate in the Mediterranean Sea, it requires regional management, but there is insufficient coordination. There was also recognition of the lack of local coordination, as some Shanshulas use small mesh size nets. Table 4 shows the landed fish by large purse seiners in the Gaza Strip from 2016 to 2020.

TABLE 5 Landed Fish by Hasaka with Small Purse Seining

Species	Group	2016	2017	2018	2019	2020
Anchovies	Pelagic	189.04	335.94	194.04	204.41	295.78
Sardines	Pelagic	205.60	122.67	179.74	188.61	281.92
Auxis rochei	Pelagic	76.15	242.11	86.89	176.6	257.2
Siganus spp.	Demersal	60.23	55.09	74.56	62.83	57.87
Scomber scombrus	Pelagic	15.97	10.74	57.87	54.87	67.16
Loligo spp. (Squid)	Cephalopod	16.29	33.51	33.77	35.51	56.17
Sillago sihama	Demersal	0.76	6.61	32.48	23.11	35.12
Trachurus spp.	Pelagic	25.79	43.59	32.08	31.15	39.67
Liza spp. (Mullets)	Pelagic	5.30	6.59	10.54	7.43	11.12
Other species		125.75	252.07	136.95	99.20	184.37
Total		720.87	1108.89	838.91	883.72	1286.38

NOTES In tons. Based on unpublished DOF data.

Landed Fish by Hasaka. Hasakas with motors (small-scale fishing vessels) use different fishing gear, depending on the fishing season. The collected landed fish data were determined by the five types of gear used by Hasakas small purse seining, longlines, driftnet, gillnets, and trammel nets. While some Hasakas use only one type of gear, most Hasakas use multiple types. The target fisheries of small purse seining Hasaka overlap with those of Shanshulas, but the fishing zone is different, because Hasakas fish are closer to the coastal area. Longline fishing by Hasaka targets demersal fish. Their fish catch total is smaller, but higher in value; thus, they target high-end markets, including restaurants in the Gaza Strip. Tables 5, 6, and 7 show the landed fish by Hasaka with small purse seiners, Hasaka with longlines, and Hasaka with drift nets in the Gaza Strip from 2016 to 2020.

Fishing Effort

There are four fish landing areas in the Gaza Strip. These sites are managed by the Ministry of Transport (MOT), collaborating with the Ministry of Agriculture and the Palestinian Coastal Police (PCP). While Gaza city fishing port has solid facilities with the harbour, the other three landing sites have limited facilities with a limited landing extent in the coastal areas. All the landed fish are made up to use

TABLE 6 Landed Fish by Hasaka with Set Longlines

Species	Group	2016	2017	2018	2019	2020
Epinephelus spp.	Demersal	10.20	11.92	8.06	9.23	18.02
Pagellus erythrinus	Demersal	4.64	5.20	7.07	8.07	9.03
Carcharhinus spp.	Chondrichthyes	4.81	11.35	3.32	4.21	12.10
Balistes capriscus	Demersal	1.45	1.58	2.64	1.81	3.24
Rhynchobatus	Chondrichthyes	1.82	2.33	1.72	2.01	4.03
Pagrus spp.	Demersal	2.22	0.95	1.31	1.20	2.30
Dasyatis spp.	Chondrichthyes	0.91	0.93	1.23	1.02	1.91
Argyrosomus regius	Demersal	0.88	0.40	1.21	1.34	2.04
Diplodus spp.	Demersal	1.99	0.73	1.00	0.92	1.45
Auxis rochei	Pelagic	0.82	1.03	0.98	1.06	0.99
Seriola dumerili	Pelagic	2.80	2.32	0.83	1.02	3.07
Other species		1.52	0.74	0.76	5.57	17.95
Total		34.06	39.48	30.12	37.46	76.13

NOTES In tons. Based on unpublished DOF data.

[192]

one of these four fish landing sites. Still, informal landing and transhipment are happening due to the limited capacity and the poor conditions of existing landing areas. Among the total recorded fish catch, 73.3% land at Gaza city port, 7.2% at Deir Al-Balah, 11.3% at Khanyounis, and 8.2% at Rafah (based on unpublished DOF data). There are only two ice plants available that supply ice for fishers. One is at Gaza fishing port, operated by TC, and the other is at Rafah landing site. A fishers' syndicate in Gaza plans to establish an ice plant in the Deir Al-Balah landing site. Currently, there are about 1741 registered vessels in the Gaza Strip distributed in four fishing ports (table 8). Gaza port includes the most significant number of vessels, followed by Deir Al-Balah. There are mainly five types of fishing vessels (i) Trawlers, locally called Gar, (ii) Purse seiners, locally called Shanshula (including large purse seine and small purse seine), (iii) Small Hasaka with motor (including drift nets and longlines net fishing gears vessels), (iv) Felucca, which accompany Shanshula, and (v) Hasaka with oars.

The overall total number of fishing vessels increased from 647 in 1995 to 1741 in 2020. Vessels are made of wood or fibreglass. Originally most of the vessels were made of wood. Still, recently the

TABLE 7 Landed Fish by Hasaka with Driftnet

Species	Group	2016	2017	2018	2019	2020
Sardines	Pelagic	123.18	38.86	122.21	314.50	325.80
Protuns spp.	Crustacea	7.53	9.99	20.40	51.23	67.21
Carcharhinus spp.	Chondrichthyes	3.66	6.32	16.30	30.12	45.23
Sphyraena Chrysotaenia	Pelagic	3.48	3.43	13.94	24.21	30.64
Scomberomorus spp.	Pelagic	19.49	14.10	12.50	19.86	28.63
Saurida undosquamis	Demersal	1.50	4.39	11.46	22.13	22.84
Auxis rochei	Pelagic	4.58	11.37	9.68	19.91	25.12
Pagellus erythrinus	Demersal	21.11	10.80	9.58	16.21	21.13
Sepia spp.	Cephalopod	13.01	12.89	7.44	15.12	19.61
Trachurus spp.	Pelagic	6.26	.51	6.51	11.02	15.09
Mullus spp.	Demersal	0.541	1.83	2.96	5.92	7.08
Rhynchobatus	Chondrichthyes	2.81	1.23	0.96	1.25	2.04
Liza spp.	Pelagic	0.46	0.221	1.76	0.92	1.06
Hirundichthys rondeleti	Pelagic	0.15	30.84	1.55	15.09	16.12
Loligo spp.	Cephalopod	0.601	37	1.48	12.03	21.09
Other species		23.66	9.98	7.66	29.85	18.90
Total		231.47	162.80	247.41	589.37	667.59

NOTES In tons. Based on unpublished DOF data.

TABLE 8 Fishing Vessels by Type and by Landing Areas in the Gaza Strip

Landing area	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gaza port	14	42	59	426	7	299	847
Deir Al-Balah	0	1	28	120	1	231	382
Khan Younis	0	4	21	89	14	156	284
Rafah	0	5	22	96	11	93	228
Total	14	54	130	731	33	779	1741

NOTES Column headings are as follows: (1) trawler (gar), (2) large purse seiner (shanshula), (3) small purse seiner (shanshula), (4) hasaka with motor, (5) felucca, (6) hasaka with oars, (7) total. Based on unpublished DOF data.

[193]

fishers started renewing their vessels with fibreglass, because it is lighter in weight, easy to do maintenance, lower in costs, and provides a longer boat life, besides the restrictions imposed by the Israeli occupation on importing and usage of long wood, obliging fishers to turn to fibreglass. The number of operational vessels peaked at 1036 total in 2011 when fishers could get cheap fuel from Egypt

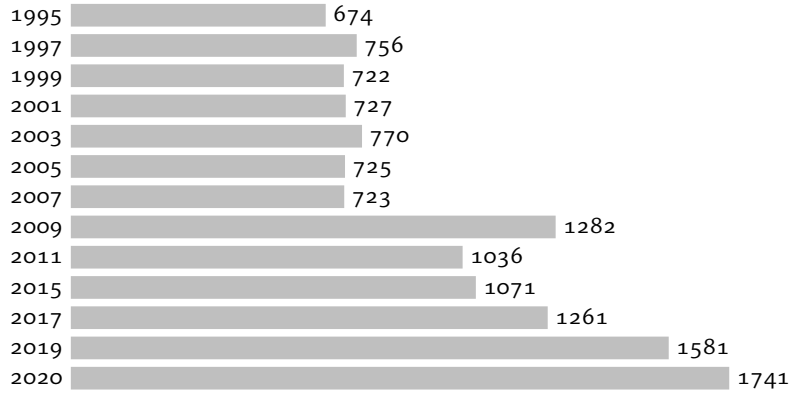

FIGURE 1 Number of Vessels in the Gaza Strip from 1995 to 2020 (based on unpublished DOF data)

around 2010 to 2013. Not all registered vessels are in operation. Figure 1 shows the fluctuating number of vessels in the Gaza Strip from 1995 to 2020. Not all registered vessels are active either, because owners cannot afford to maintain their vessels, and do not renew their licenses or pay license fees, while fishers cannot afford operating costs and may have security concerns. For example, the total number of trawlers and Shanshula vessels in 2012 was 888, but only 218 were operating (25% of the registered vessels were operational) (FAO 2016). In the workshop course during February 2020, conducted by the World Bank in Gaza, the participants discussed the actual operating rate of the registered vessels, concluding that 11 trawlers among 14 are operational, and around 50–70% of registered Shanshulas and Hasakas are operational.

Most vessels in the Gaza Strip are old. The average usage period of each vessel is normally about twice as long as the ideal or typical usage period, as shown in table 9. Most owners of the vessels have different types of risk mitigation measures. Vessel owners say Hasakas are more feasible than trawlers and Shanshulas if the fishing zone is limited only to the coastal area. During the low fishing season, some vessels land on the beaches, and fishers who do not go fishing also benefit from the income if the person belongs to the same family under the vessel's owner. Owners and skippers select

TABLE 9 Summary of Different Types of Vessels in the Gaza Strip

Item	Trawler	Shanshulas	Hasaka with motor	Felucca	Hasaka with oars
Total numbers	14	54	861	33	779
Size	12–24 m	12–24 m	6–12 m	5–6 m	3–4 m
Material	Wood and fiberglass	Wood	Wood	Wood covered by fiberglass	Fiberglass
Engine	400–500 HP	200–400 HP	10–40 HP	Without engine	Without engine
Average no. of crews	11–13	9–11	3–4	1–2	2–3
Gear	Trawling net	Purse seine net	Gillnets, trammel net, and purse seine, hooks	Assistant boat	Gillnet, trammel net, Beach Purse seine
Target fish	Demersal fish, Prawn	Pelagic fish	Pelagic and demersal	Not applicable	Coastal demersal fish
Average usage period	20–25 years	20–25 years	15–20 years	15–20 years	5–10 years
Average days at sea	226 days	177 days	153 days	177 days	250
Average daily wage per crew	50 NIS (15 US$)	40 NIS (12 US$)	20 NIS (6 US$)	Mostly self-employed	12 NIS (3.5 US$)
Effort (days at sea)	228–240 days	180–190 days	155–180 days	Not applicable	260–290

NOTES Based on unpublished DOF data.

the fishers on board. Those who have no other source of income, have economic obligations and a higher number of children usually acquire priority to be on board for fishing. The average daily wage per crew is around 50 NIS (15 US$) for trawlers, 40 NIS (12 US$) for Shanshula, and 20 NIS (6 US$) for Hasaka with motors. Fishers can hardly live on such a low income. Winches and tractors are used for launching, landing, and beaching the vessels. The annual cost of using this old equipment and engines is 2,500 NIS (715 US$) and NIS 900 NIS (57.14 US$) for Shanshula and Hasaka with motors, respectively.

In some cases, injuries happen among the fishers due to the in-

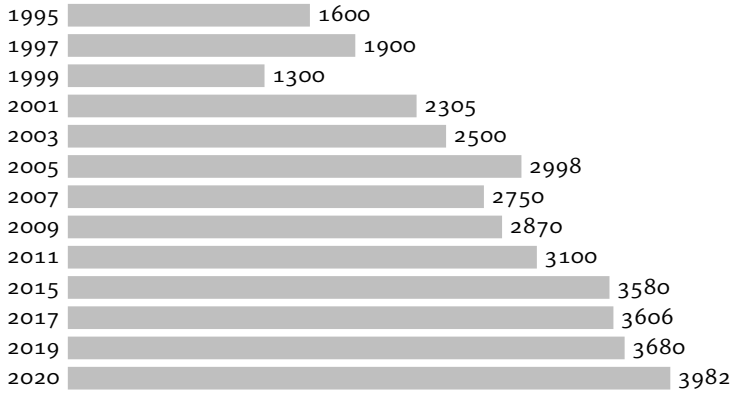

FIGURE 2 Number of Fishers in the Gaza Strip from 1995 to 2020 (based on unpublished DOF data)

[196]

adequacy of the equipment, and the vessels are likewise damaged during landings. Conventionally, trawlers and Shanshula do not fish near the coastline because the bottom of the vessels would be damaged in order to give some fishing space for small vessels like Hasakas. When there are restrictions in the fishing area, all different vessels fish in the same area near the coastal extents, which sometimes causes arguments among the fishers and the responsible organizations. Smaller mesh nets, sometimes 5mm in size, tend to be used when fishing near the coast occurs.

Several characteristics, including the restricted continental shelf, artisanal gears and vessels, lack of electronic equipment (e.g., GPS, fish finder), and lack of freezing facilities, result in fishing activities restricted to 3–6 and sometimes 6–9 nautical miles from the coast. Most fishing gears use small mesh sizes and hooks because small-sized fish and juveniles exist in the landings. The fishing techniques are mostly based on passive gears such as gillnets, trammel nets, longlines, purse seine nets, drift nets, trawler nets, and beach seines. Fishing operations, with the exception of longlines, are mostly carried out at depths of up to 50 m. It stands to reason to have knowledge about the number of fishers and how it has varied over the years due to fishing restrictions (see figure 2). After the Second Intifada, the number of fishers in the Gaza Strip declined for a few

years to reach a plateau from 2004 until 2012. After 2013, and the expansion of the fishing zone, fishers started slowly coming back to the sea and the profession. This can also be explained by the change in the composition of the sea vessel fleet. The new fleet was composed of smaller and non-motorized boats; therefore, more hands-on-deck were needed for the same amount of fish yield. In addition, the 2006 fishers spike in the Gaza city might be explained as either a logistical error or a different way of classifying where each fisherman belonged. [197]

One discrepancy that appears through this piece of information is that it goes against every other source on the matter. Multiple accounts in the bibliography state that the number of fishers has progressively dwindled over the years, a notion that local sources in the area have also cultivated, whether by NGOS and organizations, or fishers themselves. Yet according to the information by the Palestinian Central Bureau of Statistics (PCBS 2019), besides the decline of 2010, the number of fishers either remained stable or increased steadily from 2004 until 2020.

Domestic and marine cage aquaculture fish farming is growing and seems to be one of the most auspicious sectors in the Gaza Strip. In 2010, Gilthead seabream (Sparus aurata) and European seabass (Dicentrarchus labrax) were introduced. Lately, the marine cage aquaculture of Seabream has commenced as a pilot project. Domestic Tilapia fish farming has the longest history in the Gaza Strip, and still, many small farmers raise Tilapia in small ponds and irrigation systems. In 1997, the DOF constructed a small-scale Tilapia hatchery and produced Tilapia fingerings for sale. In 2005, the Palestinian Agriculture Development Association (PARC), with DOF, were advanced through a training session on Tilapia hatcheries in Egypt and formed a new freshwater Tilapia hatchery in the Gaza Strip. DOF provided fingerlings to about 20 irrigation ponds, which afford organic fertilizer for irrigation purposes.

FAO also supported the formation of about 13 intensive fish farming facilities and 300 irrigation-based fish farms. Many small farmers continue raising Tilapia in small ponds and irrigation systems, and it is easy to get Tilapia fingerlings in the Gaza Strip. Eu-

ropean seabass and Grey mullet farming did not develop as much as Tilapia, and the production of these fisheries is minimal (The World Bank 2020). Seabream and Seabass species were introduced to the market in 2010, and Gilthead seabream production is continuing.
[198] A number of private businesses started to raise Sparus aurata and Dicentrarchus labrax in 2010, but most of them had to close their business in 2013 when the future looked gloomy, and also could not finance fuel for backup generators use. Presently, two farms are operational: Al-Bahar in Gaza city and Fish Fresh in Rafah city produce about 300 and 450 tons of Gilthead seabream fingerlings.

The cost of Gilthead seabream fingerling production is about 33 NIS per kg (10 US$). Imported Gilthead seabream fingerling used to cost around 2.4 NIS (0.72 US$) per gram, but now it is available for about 1 NIS (0.30 US$) per gram, because of the current hatcheries in the Gaza Strip. Presently, around 1.5 million Gilthead seabream fingerlings are produced in a year. Gilthead seabream production has been increasing. Currently, about 60% of the production is exported to the West Bank. Following the success of domestic fish farming, FAO introduced an inventive project of marine cage farming intending to support the resilience and livelihoods of the fisheries sector. The project established a pilot cage farm delivering marine aquaculture technologies and capacity development to fishers and the Gaza Fisheries Syndicate to operate the marine cage farm as a social business and promote access and links to markets.

The pilot marine cage farm, which started in the middle of 2020, is located approximately 3.5 nautical miles off the southern border of the Deir Al-Balah governorate. The establishment of this marine aquaculture zone is expected to encourage the future growth of the marine aquaculture sector in the Gaza Strip (FAO 2018). Many studies were conducted before introducing the project, including possible diseases and weather conditions (FAO 2018). Tension Leg Cage (TLC) is considered the most suitable system and will be mounted throughout the project. The project also supports capacity development and generates several skilled jobs required for management and operations. The fingerlings of seabream will be available from the local market. The farm location is acknowledged in coordina-

tion with the Gaza Port Authority, DOF, and MOA and shared with other experienced fishers to diminish the risk. The project will also enable accessibility to trade Gilthead seabream in the West Bank and external markets. There are no fish feed industries in the Gaza Strip. Owners of aquaculture businesses keep large feeder records for the crisis, which costs them a lot of money and space. Whereas most feed for inland aquaculture and marine cage culture is imported, some farmers started developing alternatives for imported fish feed, including the Azolla plant. This aquatic fern grows on the water surface. Azolla plant fish feed is a cost-effective, environmentally friendly, and economical feed. The Gaza Strip is well-known for citrus fruits and other crops, and there are fruit and vegetable wastes that can be used for fish feed. A study suggested that an orange peel can improve the nutrient absorptive ability of the intestine in Nile tilapia (Salem, Heba, and Abdel-Ghany 2018). In addition, another study concludes that potato peel feed is very nutritive and helps in the qualitative and quantitative growth of fish. That orange peel feed showed brighter body scales (Sanyogita and Satyanarayan 2016). However, using citrus and vegetable peel, and other plant residues is recommended to be tested as alternative fish feed in the Gaza Strip.

Socioeconomic Aspects of Fisheries and Aquaculture

The fishers in the Gaza Strip are present mostly in inaccessible live-in areas where there are no modern communication systems, having a very low developmental and socio-economic impact in the community. There is no denying that fishers and the fishing community as a whole are the poorest and most disadvantaged groups in the Gaza Strip. They have no other income-generating activities except fishing, which cannot be carried out throughout the year while in idle periods, they lack alternative employment opportunities. Their socio-economic development is negligible. For the overall planning, development, and implementation in the fisheries sector, it is necessary to have sound knowledge about the livelihood patterns of the related people.

The study showed that a majority (95%) were married, while the

unmarried fishers represented only 5% of active fishers. In the fisheries community area, there are a total of 3,982 fishers, the members in the fishermen families approximability 21,021, of which 9,029 are adults (44%) and 4,720 are children (23%), and 2,257 are old (11%),
[200] and 4,515 were women (22%).

The fishing area is an important characteristic, especially for commercial fishing as the habitats of the fish in the sea are not found everywhere. Therefore, it is important to choose a fishing area that is more commercially viable for fishing.

Most of the fishers in the fisheries community area in the Gaza Strip are used to going from 3 to 12 miles from the seashore for fishing. The duration of the fishing trip depends on the availability of fish and catch. Depending on various factors, duration is usually from 6 to 12 hours for most vessels and about 24 hours for the trawlers segment during the day and night. Different kinds of fishing gear are used in the fisheries community of the Gaza Strip. Most fishing gears use small mesh sizes and hooks, with the significance that small-sized fish and juveniles exist on the landing sides. The fishing methods are mostly based on passive gears such as gillnets, trammel nets, longlines, purse seine nets, drift nets, trawler nets, and beach seines. These are traditional fishing nets widely used in the coastal area of Gaza. Usually, large, medium, and small-sized boats are used. There are 11 trawlers for deep-sea fishing. Most of the vessels are operated by using motors. Capacity utilization of days at sea is about 75%. The fleet-average length over all is 18 m to 24 m, 18 m (trawlers and large purse seiners), 6 to 9 meters for small purse seiners and small-scale vessels with motor, and 3 to 4 meters for small-scale vessels without an engine using passive gear. The motor power of the vessels range from 20 to 450 horsepower (HP) mostly. Some fishers have their vessels; some share the vessel and others work as labourers on vessels. There are about 54 kinds of species usually caught in Gaza Strip marine waters. Most fishers reported Sardina spp. catch is dominant, and others are Loligo spp., Engraulis Spp., Etrumeus spp., Mullus barbatus, Trachurus spp., Sphyraena spp., Dasyatis spp., Sillago sihama, Auxis rochei, Liza spp., Thunnus thynnus, Pagellus erythrinus, Argyroso-

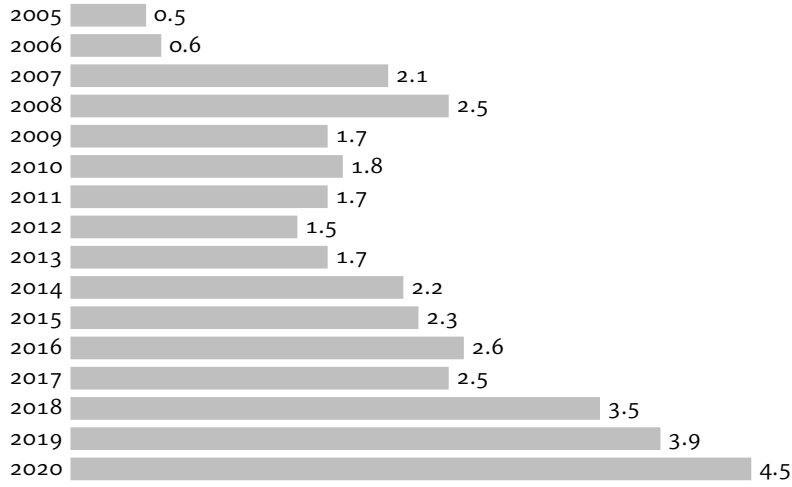

FIGURE 3 Per capita fish consumption in West Bank and Gaza from 2005 to 2020 (kg/year; based on FAO 2020 and unpublished DOF data)

mus regius, Alectis alexandrinus, Sepia sp., Balistes capriscus, Red mullets, Poops boops, Dentex gibbosus, Trachinotus ovatus, Anchovies, Saurida undosquamis, Protuns sp., Sphyraena Chrysotaenia, Scomberomorus, Hirundichthys rondeleti, Epinephelus spp., etc. For the average fishing trip, vessels in the Gaza Strip caught 32 kg of fish per day in each catch. 65% of the fishers sell their captured fish wholesale to retailers in the markets, and 35% sell their fish directly to consumers. The interviews found that the fishers' highest income per month (14 working days) from selling fish is 320 USD, and the lowest is 61 USD.

Moreover, every year, many people are becoming involved in fishing as a seasonal or part-time occupation. As a result, fishing pressure is continuously increasing in the sea. 4% of fishers' monthly income is about 320 USD, 14% of fishers' monthly income is 220 USD, 15% is 10 USD, 30% 80 USD, and 37% of fishers' income is about 65 USD.

The fish species in the Gaza Strip are clustered into two classes: 'high-value fish' and 'public fish,' according to the determination of DOF for trade purposes. High-value fish are those with a unit cost of over 6 USD per kilogram, and public fish cost less than 6 USD

per kilogram. Public fish, such as sardines and anchovies, are normally consumed in Gaza. Resident consumption of fish has been low, but has demonstrated a sound increase. A FAO study indicated that average fish consumption in the Gaza Strip is 3.5 kilograms per
[202] person per year. This is very low compared to neighbouring countries, where average consumption is around 15 kg per person per year (FAO 2020). Figure 3 shows the growth of understood fish consumption per capita in the West Bank and Gaza Strip (separate data for the Gaza Strip did not exist). It is observed that much of the fish consumption compared to the West Bank is recorded in the Gaza Strip. The increase in fish demand has been supported by expanding fish imports. As understood from figure 3, the amount of food fish consumed in the West Bank and Gaza has increased noticeably, but much of it is characterized by fish imports. In agreement with the FAO booklet, annual fish consumption in the Gaza Strip is presently about 20,000 tons. Customary fishing produces 26% of locally consumed fish, with in-land aquaculture producing 3%. The shortage is supported by fish imports from abroad, which account for over 66% of locally consumed fish. Fish exports from the Gaza Strip have increased recently, mostly due to increased aquaculture fish export. There was no trade from 2008 to 2013. Since the truce in 2014, Gaza started again exporting fish, but merely to the West Bank. The amount of aquaculture fish production has increased, and its export is also growing.

High-value fish include seabream, seabass, and octopus. There is no limit in exporting high-value fish, and exporters prefer to handle high-value fish. Meanwhile, public fish are limited for export, because they are considered to have high demand in the local market. Public fish include sardines and anchovies. Fish from the Gaza Strip is exported to the West Bank only on Sundays and Wednesdays. The volume of export by each exporter is limited to 1.5 tons per week, resulting in a total of 24 tons a month for all four permitted exporters. Four leading exporters trade fish with the West Bank. They have to take pre-authorization permission from DOF to export fish. Exporting fish from the Gaza Strip is more profitable than selling locally, creating 30% added value to the revenues. Traders mentioned

a shortage in essential infrastructures for export, such as storage and collection centres, decent transportation, cold storage facilities on the border, distribution packing centres, and other export trade support. They experienced high costs due to the border and road closures. These high business costs (favouring mainly Israel) make [203] Palestinian agricultural output uncompetitive in the export markets despite a strong internal and external demand. However, according to the traders, trading with the West Bank is feasible and promising for future interventions by investors conditioned with facilities from the Israeli side. They also certify that inland fish farming could hold promise on the grounds of flexible exportation and lower production costs.

The Current Status of Fisheries Management

The question of how best to manage littoral resource for artisanal fisheries has been examined on a large scale in the Mediterranean basin, including the topics of closed areas, co-management and options. There are many strategies that can be used to address threats to the marine environment, and fisheries in particular. These strategies may be cross-cutting and may relate to structural as well as non-structural measures. It may also contain actions that have already been previously defined by different organisations. Accordingly, a set of potential strategies related to fisheries were presented in a study made by (Abudaya, Harper, and Ulman 2013).

The General Directorate of Fisheries in the Ministry of Agriculture is the chief authority responsible for fisheries management and collecting associated fisheries statistics. The DOF played an important role in fisheries management up to 2007, by issuing licenses to fishers, administering the construction of ships, collecting and analysing data, solving arguments between fishers, enforcing laws and regulations, ensuring the health and safety of fishers, inspection of the quality of fish before arriving at the auction market, capacity-building in health and safety and on the technical subjects of fishing. Since 2007, though, the DOF's role has weakened because of the crucial political situation and financial difficulties.

The main challenge of the fisheries sector in the Gaza Strip is the

extremely limited fishing zone, especially to the three n.m. This restriction has been imposed by the Israeli military on fishers regarding access to the fishing areas along the Gaza Strip coast where the fishers are always trying to protect themselves from being shot and
[204] arrested by the Israeli military. However, such a limitation has substantially reduced both the quantity and quality of fishing catches. Thus, nearly 90% of fishers are now considered either poor (with a monthly income of between 100 and 150 US$) or very poor (earning less than 100 US$ per month), which constitutes a sharp increase from 2009 when almost 50% of fishers fell into these categories. Although this restriction, imposed by the Israeli military, is justified 'for security reasons,' which is uncertain, it seriously affects the fisheries' economic viability and long-term sustainable exploitation, which profoundly impacts the fisheries' livelihoods and food security. The fishers know very well the restrictions imposed on fishing activities in the Gaza Sea are their main obstacle for meeting the challenge for the survival and progress of the fisheries sector. Applying the fishing terms of the Oslo Accord to the 20-n.m. limit would remove this obstacle and open up opportunities for Gazans from which they are presently destitute. Fishing beyond the 12 n.m. would improve the sector and bring considerable economic nutritional benefits, as well as employment and many other advantages to the sector.

The Gaza Strip faces a decline in employment opportunities imposed by the occupation, leading to high poverty rates and a lack of employment opportunities. It becomes impossible to build an economy in conditions that lack the most basic development necessities. Other conditions have to be met. The fisheries authorities and public institutions should make long-term arrangements to strengthen and upgrade the capacity of the fishers and fish farmers in the Gaza Strip, and the related fishing support activities to improve the management and the governance of the sector. The level of experience in the modern methods of running fisheries also needs to be raised while the sector's needs should be better understood. The restriction on importing the various requirements for the sector should be lifted without burden. The number and type of fishing equipment

required to maintain the existing vessels and gears, and onshore services to develop new fishing methods, should be provided. Until the pledged entirely devoted fisheries harbour is lastly established, the current fisheries infrastructure facilities in the small Gaza harbour, the fish market (the Hisba) and the fishing and marketing support [205] services, will remain in poor condition, and what is available needs to be improved and expanded.

Under the present conditions, Gaza needs and often receives aid and assistance from several international and regional donors and NGOS in various fields, including the fisheries sector. For example, Palestine takes part in the FAO executed EastMed project, GFCM, and others, and receives support from donor agencies such as the EU, USAID, and others. However, it is recommended that this support be continued without interruption and expanded to the fisheries sector to become self-sufficient and support itself. The areas of assistance most needed include (1) training of fishers and fish farmers on new and more productive techniques, (2) data collection and analyses, (3) stock assessment, (4) value-added production, (5) promises for export, (6) hygienic systems in fish preservation and processing, (7) marketing techniques, (8) value-chain analysis, (9) introduction of new species and other issues that support a sustainable fishery in the Gaza Strip.

The Fisheries Organizing Law of 2005 was qualified and approved by the cabinet of the Palestinian National Authority. The law is for (i) promoting the general plan for protecting fisheries and the long-term conservation, sustainability, development, processing, and utilization of fishery resources; (ii) the organization and management of fishing and aquaculture; (iii) programs to protect the marine environment, reduce pollution of fishing waters, work to address the adverse environmental effects of fisheries resulting from humanitarian activities, avoid excess fishing capacity, and maintain the exploitation of fish stocks from an economic point of view in coordination with the competent authorities; (iv) the development of investment in fisheries; (v) scientific research in the field of fisheries and aquaculture; (vi) the setting of standards of conduct for all those involved in fisheries and aquaculture and the development and ra-

tionalization of fishing methods and method, and (vii) enhancing the contribution of fisheries and aquaculture to food security.

The Palestinian law of environment No.7 was established in 1999, which is a framework for protecting the environment, public health,
[206] and biodiversity in Palestine, including marine areas. The law includes a narrative that the Environment Quality Authority (EQA), in coordination with specialized agencies, shall set standards for seawater quality, and set rules and regulations to prevent marine environment pollution that comes as a result of wastewater discharges and solid waste dumping. It is well known that different ministries and departments were working in the fisheries sector in the Gaza Strip along with agencies, which had significant roles, until 2007, but a lot has changed since then. Until 2007, the Palestinian National Authority (PNA) obliged all boats and ships to have telecommunications equipment tools to enable fisheries and maritime police to communicate and track them. The Ministry of Agriculture used to conduct more training for fishers and the Ministry of Transport used to update vessel data in terms of efficiency, effectiveness, licensing, and registration. The vessels were previously licensed based on specific lengths and standards, but currently, new licenses are frozen. There was a protected area where fishing was prohibited during the mating and spring periods and prevented fishing within 3 miles of shore. Still, unfortunately, fishers at present are not implementing these laws due to the political and economic situation and, above all, the delimited Israeli siege on the Gaza Strip.

DISCUSSION

It is clear that Gaza has a smaller production capacity in terms of both fisheries and aquaculture. Trends show that fisheries production has fluctuated in recent years, while aquaculture has gained considerable importance, because of the increasing human population's high demand for aquatic food products. Therefore, the aquaculture industry is a promising sector for the economy in Gaza, while wild fisheries have more challenges to overcome. The geographical location of Gaza presents a major advantage in supporting biodiversity in marine and brackish water resources. Fisheries in Gaza are

still an underdeveloped activity, and they remain a poorly managed sector compared to other large neighbouring eastern Mediterranean countries (e.g., Egypt, Turkey, and Greece). The reported increase in landings in the late eighties and nineties is possibly attributable to the improvements in fishing technology, a large area of the fishing [207] zone, and increasing effort rather than a clear retrieval. There was a similar worldwide increase in fish landings (including the Mediterranean) during the eighties. However, landings have decreased or remained constant in later years despite technological advances due to the depletion of traditional fishing grounds (Pauly et al. 2002) and minimizing the fishing zone.

International Organizations such as FAO started to support fish farms financially in the late nineties (FAO 2010). Therefore, aquaculture production increased 472% in the years between 2011 and 2020. As a result, fish consumption in Gaza rose to 4.5 kg per capita per year, which is a small amount when compared to the average European consumption (22 kg) and less than the global (15.3 kg) and African (10.4 kilograms) averages (FAO 2013; 2020). It has averaged around 2.5 kilograms over the past decade. Marine and aquaculture fisheries are the main source (about 30%) of wild production, and the remainder is imported from abroad. The aforementioned decline was mainly due to the decrease in marine fishery landings. In turn, fishing efforts gradually increased during the same period. This would inevitably lower the CPUE (catch per unit effort) as more vessels compete for fewer resources. One of the main difficulties in Gaza marine fisheries (Mediterranean Sea) is that they depend very much on seasonal supplies of small pelagic fish species. These species show great fluctuations on a global scale, because they are more vulnerable to environmental factors (Fréon et al. 2005). However, the current fishing regulations are unenforced, and illegal fishing techniques, including destructive fishing, are affecting marine resources (Ashworth and Ormond 2005; Samy-Kamal, Sánches, and Forcada 2011). Thus, some (MPAS) are now functioning as 'paper parks' (Mora et al. 2006; Guidetti et al. 2008; Rife et al. 2013; Advani et al. 2015). However, there are currently no marine protected areas in the territorial waters of the Gaza Strip. In turn, Mediterranean

fisheries are suffering from unjustified trawl fleet overcapacity.

Moreover, all the landing sites are facing the same challenges: pollution, habitat loss, a significant reduction in area, the spread of aquatic weeds, declining fish yield and quality, overfishing, illegal
[208] fishing practices like harvesting of fish fry. These are actually part of the whole challenges facing the marine environment and fishery resources of the Gaza Strip (MENA 2001; Abd Rabou et al. 2007). There is low awareness among fishers of environmental issues, and the need for regulation measures is of utmost priority (Mehanna 2008). Most of these assessments have recommended a reduction in fishing mortality of 40% via the adoption of appropriate management measures. Such recommendations include the improvement of trawl selectivity by increasing mesh sizes, identifying and protecting nursery and spawning areas, the minimum distance of trawling from the coast, and closed areas and seasons (FAO 2014).

Compared to other neighboring countries such as Egypt and Lebanon, fisheries management in Gaza faces challenges from the problematic nature of the accompanying socio-ecological systems. The fisheries are defined as labour-intensive, multi-species, and multi-gear; they are extensively distributed along the coast and related to high levels of community need. It is durable to control fishers' behaviour or impose and implement regulations in such a situation. The demand for fishery resources has been steadily increasing due to the rise in population and increased unemployment rate. This has led to increased pressure on stocks and the use of damaging and illegal gear and practices. Most of the damaging methods are prohibited by law, but continue to be used due to lack of investigation, enforcement, public awareness, and increased poverty. Despite the existence of national legislation for the potential ability to address fishery management issues, these laws have not been implemented to the completest level (FAO 2014). To our knowledge, more licenses have been issued to fishers and new vessels to practice fishing in marine waters of the Gaza Strip, and the mesh-size regulations were set at lower limits than experts and scientists recommended (based on unpublished DOF data).

Additionally, these laws and regulations are somewhat old and

seem not to consider the current changes in international policy or regional fisheries arrangements. The laws vary with the General Fisheries Commission for the Mediterranean regulations, despite Gaza not yet being a member, but Palestine is an observer in FAO. Consequently, the wild fisheries of Gaza are under-regulated with [209] no rational management plans. This has had positive results on the amount of national production and distorted multi-species production into farmed single-species production.

Although fisheries in Gaza look to be poorly studied (Shaheen 2016; Abu Amra 2018), much information is still needed to address management gaps. The management of fisheries requires detailed data on the fleets and misused resources. Such information should indicate the status of each fishery, their dynamics, characteristics, as well as of time and spatial distribution of each fleet (e.g., Forcada et al. 2010; Samy-Kamal, Forcada, and Sánchez Lizaso 2014). It should also include confirmation supporting estimates of maximum sustainable yield and documentation of the standing stock's best size and age composition. To retrieve this information, it is indispensable that scientists, in turn, be provided with data on harvests, numbers of fishers, gear types, vessels, effort, and fishing location.

In Gaza, fisheries statistics collected from the landing sites are not comprehensive enough to provide a complete picture of the resources and fleets. Furthermore, knowledge of the ecology of marine fish communities is sparse, and quantitative ecological studies and research on invasive species (Abd Rabou 2019) are needed. For instance, there are no data on the impact of the aquaculture farms on the nearby marine environment or the yield of adjacent fisheries. In such intensive coastal aquaculture areas as Gaza, fish farms may act as small MPAS. For this reason, the ecological interactions with the surrounding fishing grounds and influences on the fish stocks should be considered (Dempster et al. 2002). The future of fisheries management in Gaza also lies in improving the current management strategies and measures. It is important to evaluate the effectiveness of management measures (e.g., Samy-Kamal, Forcada, and Sánchez Lizaso 2015a; 2015b; 2015c) to understand if they can achieve their main objectives.

Fish is one of the most important food sources of human beings and is of great importance at local and global level. The fisheries sector is a form of agricultural production in the Gaza Strip and is always targeted by the Israeli occupation forces. This has a negative
[210] impact on the rate of fish production from marine catches. Fish is one of the most important food sources for humans, because they contain protein and essential nutrients. The Food and Agriculture Organization (FAO) has recommended that the annual lowest individual consumes 13 kg of fish. In the Gaza Strip, by sea catches, only 1.75 kg per capita is available annually; imported fish supply the rest. The per capita share was 4.1 kg in 2016 due to the increase in the area of the fishing zone in Gaza.

An overview of the fishing history showed that the period (1967–1978) was the golden age of the fishing profession in the Gaza Strip. This is due to the area where the fishers were allowed to do fishing, up to 180 km from the shore of the Gaza Sea to Lake Bardawil in the south, near the city of El Arish; sometimes fishers arrived in the Egyptian Port Said. As a result, the amount of fish caught in that period reached 60 tonnes per day, but the situation did not continue in this way. The Israeli occupation authorities started to impose obstacles on the fishers, and they set the allowed fishing distance of 82 km, which reduced the amount of fish caught. After the Oslo agreement was signed between Israel and the PLO in 1993–1994, this distance was reduced to 20 nautical miles. The occupation authorities did not commit to allowing fishers to use this fishing zone, which was reduced to 12 nautical miles. Therefore, the amount of caught fish decreased (WAFA 2020). After the Israeli war on the Gaza Strip, from December 2008 until January 2009, Israel narrowed the allowable distance to three nautical miles, which negatively affected the fishing sector in the Gaza Strip. This prevented many vessels from operating; Shanshulas catches ceased working in sardine fishing, which accounted from 40 to 70% of total fish production (WAFA 2020). This closure lasted until December 11, 2012, and after the intervention of a number of international organizations, the fishing area was increased to 6 nautical miles. This continued until 23 March 2013; the fishing boundary returned to 3 nautical miles

until 21 May 2013, once again rebounding to an area of 6 miles until (October 2016), and finally to this day returned to an area of: 15 miles in the south of Gaza, 12 miles in the middle of Gaza, 9 miles from Gaza seaport to Wadi Gaza and 6 miles in the northern of Gaza near the borders of Gaza (based on unpublished DOF data). [211]

In the context of widespread unemployment and food insecurity, the fishing sector continues to be an important source of employment. Fish, especially sardines, is a significant source of protein, micronutrients, and omega-3 fatty acids for people in Gaza and contributes to nutritional variety. In 2017, it was estimated that 40% of households in Gaza were severely or moderately food insecure, while unemployment rates reached 43.6%. According to the Directorate General of Fisheries in the Ministry of Agriculture, 3,700 registered fishers in Gaza depend on this sector for their livelihoods. Gaza fishers are estimated to support another 18,250 people (based on an average household size of 5–7 in Gaza). It is also estimated that a large number of people depend on fishing-related industries, including vessels and fishing gear maintenance and fish retailing. According to the Ministry of Agriculture, only 2,000 registered people fish daily, while approximately 1,700 in the sector work sporadically, about once a month. Fishing quantities and revenues vary widely over the years, while the designation of fishing grounds affects fish landing quantities and revenues. Revenues also vary depending on the type and quantity of fish available in the specified area. Restricting fishing in a small area near the coast leads to overfishing and has a negative impact on fish breeding areas. According to the Directorate General of Fisheries, the effects of the restrictions on the fishing zone and its limitation to three nautical miles in 2006 and 2007 were not seen until 2009, when the fish breeding areas of the 3-nautical-mile zone were heavily depleted (OCHA 2018).

The income of fishers from fishing does not cover their operating costs. The Gaza Strip still suffers from a shortage of fish due to the occupation authorities imposing fishing restrictions, which sometimes prevents fishers from practising the profession of fishing at sea. This has encouraged the people to establish fish farms to meet their needs from fish. A number of traders have turned to

fish farming projects, 'fishponds,' to compensate for the shortage of fish stocks. Despite the importance of these projects to the fisheries sector, they are almost limited due to their high cost and current political and economic conditions (OCHA 2018).

[212] The marine ecosystem of the Gaza Strip has been degraded. Construction along the coastline has blocked sand transport and has caused an erosive effect on the coast downstream. Large vessels are damaging the seabed, hence affecting the habitats and niches of marine life. The discharge of partially treated sewage into the seawater from different wastewater treatment plants is a serious challenge affecting the marine environment. This discharge may pose serious health hazards, destroy marine habitats, and causes severe threats to the population of marine biota such as fish, zooplankton, phytoplankton, and macro-algae. The dumping of solid wastes in the coastal and marine environments by locals and fishers has affected the marine ecosystem. Fishers have collected solid waste in their fishing nets, which can pose direct threats to marine species and their habitats (MENA 2001; Abd Rabou 2007; 2013).

CONCLUSION

The challenges of fisheries in the Gaza Strip are closely related to the current complex security and political situation. The fisheries in Gaza are a reflection of the devastating impact of Israeli policies on the citizens of Gaza. Access to resources that would provide them with food for subsistence is significantly impeded. Poverty, lack of training, and lack of sanctions contribute to a continued poor management of the resource; but poor management of the resource is also the only option available to people trying to survive.

The fisheries and aquaculture sector in the Gaza Strip has many challenges of institutional structure, movement constraints, having old infrastructures and vessels. Despite these various challenges, there is also potential to expand, create more jobs, and generate more revenue. There is potential for capacity development in the fisheries and aquaculture sector in the Gaza Strip. People are desperate to attain new knowledge and techniques. They suffer from a lack of exchange of experiences with the outside world, which affects the

quality of research, data, fishing skills, health and safety procedures, and ports and ship management. Different stakeholders exist in the fisheries and aquaculture sector, and it is useful to clarify more details of available capacity and capacity development needs. Sustainable fisheries development and improving the value-chain of fisheries and aquaculture sectors have the potential to increase more job opportunities and economic development activities. It is required to have comprehensive coastal and environmental management of the fisheries sector in the Gaza Strip. [213]

The challenge for Gaza fisheries managers is not only to provide proper strategies to develop the current situation in Gaza, but also to monitor the success of management plans and implementation of the guidelines. Most of the measures and guidelines related to fisheries are outdated and often not followed, making the situation difficult to control. Furthermore, little data exist on environmental issues' social and economic aspects. In general, there is a lack of communication among the leading groups of stakeholders in adaptive management: managers, fishers, experts, and scientists. Experts, policymakers, scientists, and fisheries managers need to consider these fisheries' various scopes and nature, counting the framework in which they work. They must then try to evolve management policies proper to the framework of these fisheries.

Moreover, integrating the fishing sector into management decisions and actions is very important (Jentoft 1989). This helps understand the community's priorities and behaviour in order to adopt appropriate management tools to their needs (Gelcich, Godoy, and Castilla 2009; Pita et al. 2011). Improving enforcement is necessary, and this implies the need for greater effectiveness of fisheries perambulations, which may enhance community education regarding environmental and fisheries concerns.

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IJEMS | SCIENTIFIC ARTICLE

Promoting SME Access to Finance: Evidence from the Manufacturing Sector in Egypt

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The manufacturing sector and its small and medium enterprises (SMES) segment are considered to be drivers of job creation. In Egypt, both these sectors have seen their share in total employment decline over the past decades. This paper examines the recent efforts by the Egyptian government to promote manufacturing sector growth and expand the sector's access to finance, particularly to SMES. Using the World Bank Enterprise Surveys data from 2013, 2016 and 2020, the paper explores to what extent SMES in the manufacturing sector have benefited from those recent financing programs. Findings indicate that insufficient access to finance remains a major constraint on manufacturing SMES. The funding initiatives were not appropriately directed towards the most credit-constrained companies. This paper puts forward evidence-based policy recommendations to facilitate more effective banking and non-banking financing that can boost their employment generation capacities.

Key Words: SMES, access to finance, manufacturing sector, job creation, banking and non-banking financial services, Egypt

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INTRODUCTION

The Egyptian labor market suffers from a lack of dynamism in its private sector, particularly that of its small and medium-sized enterprises (SMES), often referred to as the 'missing middle' (World Bank

2014). These are considered a main job-creation engine in both developed and developing countries and are more likely to provide formal employment than the microenterprises that dominate employment in the private sector of developing countries. They play a key
[218] role in poverty reduction, social inclusion and innovation (Abisuga-Oyekunle, Patra, and Muchie 2019; Loewe et al. 2013). In Egypt, there has been a sluggish growth of SMES since the 1990s, and precarious work has become the norm (Assaad 2014).

Limited or lack of access to finance is one of the major obstacles for small and medium-sized enterprises (SMES) growth (Ayadi and Sessa 2017; Hampel-Milagrosa, Loewe, and Reeg 2015). In addition, there is strong evidence that access to finance, targeting SMES, can contribute to substantial job creation (Dao and Qian Liu 2017; Kumar 2017; Ayyagari et al. 2016; Beck 2013). To facilitate access to finance and SME growth, and by extension generate employment, the Central Bank of Egypt (CBE) has launched many initiatives to financially support SMES in the last five years, especially those in the manufacturing sector. This is due to the fact that the manufacturing sector represents one of the main economic activities of SMES (El-Said, Al-Said, and Zaki 2014), and is therefore, considered a major vector for employment generation (Zaki et al. 2018). The potential of employment generation is reinforced by the manufacturing sector's higher proportion of small and medium enterprises (SMES) than that of the private sector as a whole.[1]

Despite these numerous funding initiatives, there is no evidence on the reach of this funding to manufacturing SMES and/or its impact on their growth and sustainability. Previous research highlighted a striking deindustrialization in the overall economy and among SMES (Assaad et al. 2019). The manufacturing sector,[2] despite having the most employment-intensive sector from the 1980s to the mid-2000s (El-Ehwany and El-Megharbel 2009), has seen its

[1] See online appendix figure 1 (https://emuni.si/ISSN/2232-6022/15.217-244a.pdf).
[2] The manufacturing sector is defined according to the United Nations' last international standard industrial classification (United Nations 2008), encompassing 24 subsectors (at the 2-digit classification).

share in total private sector employment shrinking to 14% in 2018, down from 18% in 1998. Moreover, the share of manufacturing in SMEs' employment decreased (Assaad et al. 2019). Manufacturing represented 46% of employment in the small firms in 1996 and declined by almost half to 24% in 2017. As for the share of manufacturing in medium-sized firms, it dropped from 51% in 1996 to 28% in 2017 (Assaad et al. 2019). This important deindustrialization in the overall economy and SMES requires further investigation and the evaluation of current policies. [219]

The main objective of this policy paper is two-fold. First, it sheds light on the policy and institutional framework shaping SME finance in Egypt and in particular, finance of the manufacturing sector. This analysis is conducted through in-depth interviews with stakeholders. Second, it examines the extent to which SMES in the manufacturing sector benefited from these funding initiatives and proposes solutions to make said initiatives more adequate and/or adapted to SMES. For this purpose, we rely on the World Bank Enterprise Surveys (ES) in 2013, 2016 and 2020[3] to answer three questions. First, did the perception of firms for access to finance as a constraint change before and after the recent funding programs and who benefited the most? Second, what are the major reasons that do not encourage firms to take bank loans? Third, how are SMES defined and how does this matter in terms of access to finance?

The paper is divided into six sections. Following this introduction, the second section summarizes the literature on SME financing constraints, and the link between access to finance, SME growth and employment generation. The third section presents the data sources. The policy context including the institutional and legal reforms, and initiatives that aimed to boost SME growth in the manufacturing sector, are presented in the fourth section. The fifth section presents our findings on access to finance using the ES data. The sixth section, based on a synthesis of our findings, proposes evidence-based policy solutions and recommendations on how to

[3] See https://www.enterprisesurveys.org.

ease access to finance for SMES, before the seventh section delivers the conclusion.

LITERATURE REVIEW

[220] ### *Limited Access to finance among SMES*

In a systematic review, Kersten et al. (2017) show that limited access to finance is often cited as a major constraint to SMES in low- and middle-income countries. In Egypt, previous studies demonstrated that access to finance is a major obstacle for SME growth (Ayadi and Sessa 2017; El-Said, Al-Said, and Zaki 2014). It is estimated that SME access only 10% of banking finance (Saif 2011). Despite the relatively high employment intensity of the manufacturing sector and its contribution to job creation, SMES can be particularly constrained by a finance gap. This challenge is more pronounced, among small enterprises, in the textiles and garments sector as it relies on relatively expensive equipment (Hampel-Milagrosa, Loewe, and Reeg 2015).

Several reasons are presented to explain this phenomenon: the prevalence of informality among SMES; the rigid precautionary measures of the Egyptian banking system; the lack of financial literacy among SME entrepreneurs; and the high interest loans (Ayadi and Sessa 2017; Hampel-Milagrosa, Loewe, and Reeg 2015).

In developing countries, informal SMES face much bigger financial challenges than formal firms as formal financing initiatives are primarily geared toward formal businesses. Thus, the informal status substantially affects the ability of SMES to benefit from formal funding, and consequently their ability to grow and eventually formalize (Peer, Ardic, and Hommes 2013). In Egypt, smaller firms are more likely to be informal than medium and large ones and thus less likely to obtain funding.[4]

Very few banks-and mostly national banks-lend money to SMES. Nasr (2009) and El-Said, Al-Said, and Zaki (2014) showed that banks prefer to lend to large firms, while smaller firms usually present greater risks related to their relative instability, insufficient sales

[4] See online appendix figure 2 (https://emuni.si/ISSN/2232-6022/15.217-244a.pdf).

and revenue records, lack of administrative and business documents (registration, license, tax cards) and less reliable financial statements. Consistent with the literature (Banerjee and Duflo 2014), interviews with bank officials responsible for SME funding also confirmed that banks are risk-averse to SMES, as they offer [221] fewer guarantees and are associated with higher operation costs and lower returns compared to larger firms and treasury bond investments (authors' interviews, May 31st and June 8th, 18th, and 25th 2020).

The lack of sufficient financial education or financial literacy (in terms of bookkeeping, financial documents, business plans) is relatively widespread among SMES, which prevents them from providing the information required by banks to grant loans (Plakalović 2015). El Saady (2011) and Hampel-Milagrosa, Loewe, and Reeg (2015) argue that in Egypt, many SMES are not capable of providing reliable financial documents (such as business plans and financial statements), constituting an impediment to a loan application, which is also consistent with results from several interviews.

The complexity of the banking loan application procedures (administrative and legal procedures) and the collateral requirements represent another impediment for SMES. This is demonstrated in Egypt (Houssien 2014; Nasr 2009). Other obstacles, such as a minimum required deposit amount, high interest rates and difficulty in repaying the loan, were also documented in Egypt. This explains why SMES can be discouraged from dealing with banks or taking a bank loan (Nasr 2009; Tolba, Seoudi, and Fahmy 2014). Most of them (especially the micro and small enterprises) depend on their social networks in order to obtain the needed funds (Houssien 2014).

Relationship between Access to Finance and SME Growth

As for the relationship between access to finance and employment, it is not straightforward. On the one hand, firms can use loans to increase their capital investment, which will not necessarily translate into more jobs, and depends on the degree of labor-capital substitutability or complementarity (Dao and Qian Liu 2017; Ayyagari et al. 2016). On the other hand, firms can use loans to hire and

train more people, and thus can expand in terms of employment. Ayyagari et al. (2016) show that the impact of access to finance on employment growth differs depending on firm size. Increased finance will lead to higher employment growth in Micro, Small and
[222] Medium enterprises (MSMES) than in large firms. In the same vein, Dao and Qian Liu (2017) show that reducing small firms' finance constraint contributes to firm employment growth, given the fact that small firms are more financially constrained and more labor-intensive than large firms. They also find that more jobs will be created in labor-intensive enterprises as compared to less capital-intensive enterprises. However, this result obtained at the firm level has not yet been demonstrated at the macroeconomic level, insofar other factors come into play such as the wage level, the aggregate cost of financing, and the behavior of enterprises that are not constrained by access to external finance.

Dinh, Mavridis, and Nguyen (2010) demonstrate that the impact of easing access to finance on firm-level job growth is also dependent on the sector and the firm's age. Obtaining a loan has a larger positive impact on job creation in the manufacturing sector than it does in the sales and services sectors. Younger firms which contribute more to net job growth are more likely to generate jobs through securing funding than more mature firms, because both manufacturing and young SMES are more credit-constrained than those in the services sector and older firms, respectively.

DATA SOURCES

The first question provides analysis of policy and institutional environment facing SMES, particularly manufacturing ones, information was scattered, and sometimes scarce. Thus, we proceeded by collecting all relevant information from laws, and newspapers.[5] Then, we conducted 22 in-depth semi-structured interviews with banking officials, researchers, and representatives from international and national support organizations that either work with

[5] See online appendix 2 for the questionnaire's guidelines (https://emuni.si/ISSN/2232-6022/15.217-244a.pdf).

SMEs or in the field of access to finance. The interviews were conducted between the end of May 2020 and the end of October 2020. We interviewed four Egyptian university scholars with expertise in labor markets, SMEs, supply chains, and finance; one representative from a national bank and one representative from a regional [223] bank; four officials from banking and non-banking regulatory institutions; eight representatives from international organizations; four representatives from national support organizations; and two independent SMEs consultants. This is also besides a stakeholders' consultation session that gathered eleven representatives from three national banks, four national support/regulatory institutions, three international organizations and one national initiative.

To explore to which extent CBE funding initiatives were successful in lessening the constraint of limited finance for SMEs, we employed descriptive analysis based on data from The World Bank Enterprise Surveys (ES) in 2013, 2016 and 2020.[6] The ES data are periodically representative random samples of private sector firms. The survey excludes firms in agricultural and extractive industries, public enterprises (or those fully owned by the government), financial enterprises and those employing fewer than five workers. Inference can be drawn for the manufacturing and service sectors, including retail, wholesale, accommodation, and ICT (Kuntchev et al., 2013).

POLICY CONTEXT: EGYPT'S REFORMS AND PROGRAMS

The regulatory framework is of great importance to SME growth. It builds the trust of the entrepreneurs in their relation to business and to the state (Hampel-Milagrosa, Loewe, and Reeg 2015). Nevertheless, it could explain the stagnation of small enterprises (Altenburg, Hampel-Milagrosa, and Loewe 2017). Therefore, in recent years, the government of Egypt implemented institutional reforms, enacted multiple laws and modified existing ones to regulate and improve SMEs' access to finance. It also introduced specific programs for SME lending in late 2015.

[6] See https://www.enterprisesurveys.org.

Institutional Reforms

To reduce the fragmentation of the SME policy framework, the Micro, Small and Medium Enterprises Development Agency (MSMEDA) was established in 2017 as the main entity responsible for introducing SME policies and strategy as well as their implementation (OECD 2018).

[224]

In response to the difficulties SMES encounter in obtaining financing from the banking sector, the Financial Regulatory Authority (FRA) was established in 2009 as the sole entity supervising all non-banking transactions, replacing various authorities (the Capital Market Authority, the Insurance Supervisory Authority, and the Mortgage Finance Authority). The FRA aims to increase SMES' access to a larger and more diversified financing, by granting licenses to non-banking corporations such as leasing and factoring companies.

Legal Reforms

In July 2020, the government adopted law No. 152/2020 for MSMES that introduced a unified definition of MSMES; regulations regarding their funding; the facilitation of MSME financing entities (such as business incubators and accelerators, funding entities) and formalization incentives. One major development of this new law is the adoption of a unified definition of MSMES based on several criteria: the annual business turnover; the paid or invested capital for recently established enterprises (less than two years of age); and the sectoral activity (industrial vs non-industrial activity). This definition is very close to the CBE's current definition and is summarized in table 1.

The major drawback of this definition is that the number of employees is not included in the criteria. As demonstrated below, this definition does not match the classification of enterprises by the number of employees, which is the case for the Central Agency for Public Mobilization and Statistics (CAPMAS) definition and the ES conducted by the World Bank. Subsequently, SMES targeted by the CBE's financing initiatives and that of other funding entities are considerably larger than small and medium enterprises defined ac-

TABLE 1 Unified Definition of MSMES According to the New MSME Law

Criteria			Firm Size		
Years of activity	Annual business turnover/ Paid or invested capital		Micro enterprise	Small Enterprise	Medium Enterprise
Active for more than 2 years	Annual business turnover		Less than EGP 1 million	EGP 1 million–50 million	EGP 50 million–200 million
Active less than 2 years	Paid or invested capital	Industry project	Less than EGP 50,000	EGP 50,000–5 million	EGP 5 million–15 million
		Non-industry project	Less than EGP 50,000	EGP 50,000–3 million	EGP 3 million–5 million

NOTES Adapted from Shehata Partners (2020).

cording to the number of workers. Furthermore, in order to ease access to formal finance, the Movable Collaterals Law 115/2015 was enacted and became effective in March 2018. This law allows banks to accept moveable/intangible assets and securities as collaterals, instead of only accepting real estate and other immovable collaterals like plants. The lack of sufficient collaterals was identified as one of the greatest obstacles that SMES face in Egypt with high value of collaterals, reaching 158% of the loan value in 2016.[7]

SMES Finance Initiatives

Recently, the CBE has become a major player and facilitator of access to finance for SMES, and particularly those in the manufacturing sector. In 2016, the CBE mandated national banks to dedicate a minimum of 20% of their total loan portfolio to the financing of SMES (OECD 2018). Banks were allowed to extend these loans at competitive interest rates of 5% and 12% for small and medium firms respectively (Oxford Business Group 2019).

In 2017, the CBE injected EGP 30 billion to the banking sector to encourage funding micro enterprises at a competitive 5%

[7] See https://tradingeconomics.com.

interest rate. Around 10 million customers are supposed to profit from this initiative (OECD 2018; Enterprise 2017). In 2018, the CBE launched a four-year financial scheme of EGP 200 billion to fund SME projects through short-term facilities for working capital, and
[226] exempted banks from the reserve requirements of specific credit facilities for SME financing (OECD 2018). In December 2019, the CBE dedicated EGP 100 billion to loans at a 10% diminishing interest rate targeted to medium-sized manufacturing firms. In an attempt to alleviate the economic consequences of the COVID-19 crisis, in March 2020 the rate was reduced to 8% (Egypt Today 2020). This initiative initially concerned firms whose annual revenues ranged between EGP 50 million and 1 billion. In April 2020, this cap was removed, allowing even larger firms to benefit from this program (CBE 2020). In general, it seems that most of the funding was directed to either medium enterprises, or large corporations, which established small firms that are affiliated to them, in order to be able to benefit from preferential interest rates (authors' interview, October 15th 2020).

The launch of numerous funding initiatives by the CBE as described above is a positive development. Due to the recent timing of these funding initiatives, there is no evidence on their impact on firm performance, growth, and job creation. Moreover, all of these measures, although announced as dedicated to small and medium-sized enterprises, bore a definition of firm size used by the Central Bank that resulted-in targeting large enterprises while excluding the smaller ones, which is discussed below.

RESULTS: PATTERNS OF SME ACCESS TO FINANCE OVER TIME

Limited Finance Remains an Obstacle for Manufacturing SMEs

The ES data shows that small firms were more likely to perceive access to finance as the most important obstacle. In 2013, access to finance was the second most important obstacle that small firms perceived as affecting their operation. This was true for SMES in both the manufacturing and non-manufacturing sectors. After the initiatives, access to finance seemed to improve more for small non-manufacturing firms than their manufacturing counterparts. Table

TABLE 2 Evolution of the Top 10 Business Environment Constraints, As Perceived by Small Firms (5–19 Workers)

	Constraints	Manufacturing			Non-manufacturing		
		2013	2016	2020	2013	2016	2020
Top ten constraints	Political instability	42	13	15	54	21	22
	Access to finance	19	17	10	13	15	3
	Electricity	11	17	4	5	17	1
	Corruption	5	5	18	5	4	17
	Practices of competitors in the informal sector	5	5	13	2	3	9
	Tax rates	4	7	23	4	5	27
	Business licensing and permits	4	7	4	3	6	4
	Inadequately educated workforce	3	3	4	2	3	2
	Crime, theft and disorder	3	4	1	6	8	1
	Access to land	1	3	0	1	7	1
Rest of constraints	Tax administration	1	5	5	0	1	5
	Labor regulations	1	5	2	3	2	3
	Customs and trade regulations	1	3	1	1	3	3
	Don't know	0	0	0	0	0	0
	Transport	0	2	0	0	4	1
	Does not apply	0	1	0	0	1	0
	Courts	0	4	1	1	2	0
Total		100	100	100	100	100	100

NOTES In percentage. Based on ES data (https://www.enterprisesurveys.org).

2 shows the top ten business environment constraints perceived by small firms in manufacturing and non-manufacturing sector. Between 2013 and 2020, for small non-manufacturing firms, the ranking of access to finance as a barrier to growth fell six places (2nd to 8th), compared to a fall of only three places (2nd to 5th) for small manufacturing firms. This reflects that access to finance was still considered a barrier, more so for firms in the manufacturing sector than those in the non-manufacturing one. Firms in the manufacturing sector were apparently less likely to benefit from these initiatives than those in the non-manufacturing sector.

As for medium-sized firms, the lack of access to finance ranked as

TABLE 3 Evolution of the Top 10 Business Environment Constraints, As Perceived by Medium Firms (20–99 Workers)

	Constraints	Manufacturing			Non-manufacturing		
		2013	2016	2020	2013	2016	2020
Top ten constraints	Political instability	43	18	16	59	25	26
	Electricity	15	15	8	7	14	2
	Access to finance	9	17	5	6	11	8
	Tax rates	6	7	25	3	10	18
	Corruption	6	5	9	3	4	15
	Business licensing and permits	4	8	6	4	9	6
	Practices of competitors in the informal sector	4	4	9	2	2	13
	Labor regulations	3	5	4	4	8	2
	Inadequately educated workforce	3	5	7	2	2	0
	Crime, theft and disorder	2	1	3	4	4	2
Rest of constraints	Access to land	2	2	0	1	3	0
	Transport	2	2	1	1	1	2
	Customs and trade regulations	1	5	3	2	5	2
	Tax administration	1	3	3	1	1	4
	Don't know	0	0	1	0	0	1
	Does not apply	0	2	0	0	1	0
	Courts	0	1	1	0	1	0
Total		100	100	100	100	100	100

NOTES In percentage. Based on ES data (https://www.enterprisesurveys.org).

the third most important obstacle for both manufacturing and non-manufacturing sectors in 2013. In 2020, it ranked 8th for manufacturing firms and 5th for non-manufacturing firms (table 3). Moreover, between 2013 and 2020 the proportion of medium-sized firms perceiving access as the most important obstacle fell for those in the manufacturing sector (from 9% in 2013 to 5% in 2020), whereas it increased for the non-manufacturing sector (from 6% in 2013 to 8% in 2020). Thus, funding initiatives were more effective for medium enterprises in the manufacturing sector than for small firms in lessening the perceived burden of access to finance, as shown in its lower ranking in 2020 compared to 2013.

TABLE 4 Distribution of Firms According to their Loan Uptake and Reasons Why to Apply for Loans for Small (5–19) and Medium Firms (20–99) in the Manufacturing Sector

Firm Size	Reasons not to apply for a loan	2013	2016	2020
Small (5–19 workers)	Took a loan in previous fiscal year	6	5	5
	No need for a loan*	58	68	57
	Application procedures were complex	7	10	8
	Interest rates were not favorable	14	7	11
	Collateral requirements were too high	5	2	11
	Size of loan and maturity were insufficient	1	0	0
	Did not think it would be approved	4	4	1
	Other	5	3	7
	Total	100	100	100
Medium (20–99 workers)	Took a loan in previous fiscal year	7	11	7
	No need for a loan*	67	65	64
	Application procedures were complex	7	10	7
	Interest rates were not favorable	7	5	7
	Collateral requirements were too high	4	1	8
	Size of loan and maturity were insufficient	1	0	2
	Did not think it would be approved	3	2	2
	Other	4	2	4
	Total	100	100	100

NOTES * Establishment had sufficient capital.

Reasons Not to Apply for Loans

The ES data shows that the percentage of manufacturing SMES who took a loan in a reference period (last fiscal year) is quite low (table 4). Small firms were less likely (5–6%) than medium firms (7–11%) to take a loan. The most important reason that manufacturing SMES do not take a loan was the lack of need as the establishment had sufficient capital. Medium firms were more likely than small firms to report this reason. More than two thirds of medium firms (67–73%) did not need loans, compared to slightly more than half (57–58%) of small firms.

On the other hand, a third of small firms did not take loans in 2020, either because application procedures were complex (8%), or

interest rates were not favorable (11%), or collateral requirements were too high (11%). Despite the new Moveable Collaterals Law, the percentage of firms who reported not taking a loan due to onerous collateral requirements increased substantially between 2013
[230] and 2020. Interviews suggested that there were issues in applying the Moveable Collaterals Law, especially arising from the complex and lengthy procedures of the pricing/evaluation of moveable assets (authors' interview, October 15th and 20th 2020). These procedures require the formation of a three-party committee to assess said assets.

Contradictions in Defining SMES

An important factor that may explain the low rates of access to finance relates to the definition of SMES. CAPMAS, the main statistical office of Egypt usually classifies SMES based on the number of employees, which is somewhat similar to the World Bank classification used in implementing the ES data. Thus, most datasets on SMES in Egypt, hence evidence-based research, rely on the 'number of employees' definition of SMES (Assaad et al. 2019; El-Said, Al-Said, and Zaki 2014; Hampel-Milagrosa, Loewe, and Reeg 2015; Hendy and Zaki 2013). According to this definition firms employing 5–19 workers are small, those employing 20–99 workers are medium-sized, and those with 100 workers or more are large (World Bank 2016).

As for the CBE, it defined SMES based on the annual sales/revenues whereas the number of employees was only indicative. Accordingly, CBE funding initiatives targeted small firms defined as those with annual sales between EGP 1 million and 50 million, and medium firms as those with annual sales between EGP 50 million and 200 million. Looking at the cross-distribution of establishments by their annual sales categories and the number of their employees (table 5) clearly reveals that there was a strong mismatch between the firm size definitions based on the number of workers (used by CAPMAS and the World Bank), and those based on annual sales (used by the CBE).

In 2013 and 2016, the majority (87% and 77%, respectively) of

TABLE 5 Distribution of Firms by Categories of Annual Sales by Firm Size

Firm size	Year	Annual sales									Total
		EGP 10,000–200,000	EGP 200,001–500,000	EGP 500,001–1,000,000	EGP 1,000,001–10,000,000	EGP 10–20 million	EGP 20–50 million	EGP 50–100 million	EGP 100–200 million	EGP 200 million+	
Small (5–19 workers)	2013	30	27	20	21	1	0	0	0	0	100
	2016	16	29	22	31	1	1	1	0	0	100
	2020	3	15	31	48	3	1	0	0	0	100
Medium (20–99 workers)	2013	3	4	15	60	10	4	2	1	0	100
	2016	0	7	12	58	10	6	3	2	2	100
	2020	0	0	7	55	17	11	5	1	4	100
Large (100+ workers)	2013	1	0	1	23	19	22	10	11	13	100
	2016	0	0	1	15	18	23	10	10	22	100
	2020	0	1	2	9	8	25	16	11	29	100

NOTES * In percent.

small firms (5–19 workers) respectively had annual sales below EGP 1 million, the threshold above which a firm was considered 'small' according to the CBE definition. Therefore, based on the annual sales definition, the CBE treated most small firms (5–19 workers) as micro firms.

Furthermore, most medium firms (20–99 workers) earned between EGP 1 million and 50 million per year (74 and 83% in 2013 and 2016, respectively), which was the range of sales used to define a small firm according to the CBE. Thus, CBE initiatives designed for small firms, as defined by their annual sales, were actually directed to medium-sized firms (20–99 workers). Similarly, access to finance programs for medium firms whose annual sales ranged between 50 and 200 million EGP were more directed toward large enterprises (100+ workers).

This finding may explain why, over time, medium firms (20–99

workers) were more likely than small firms (5–19 workers) to perceive access to finance as a less important obstacle, since funding initiatives targeted firms with larger annual sales than those typically exhibited by small firms.

[232]

POLICY OPTIONS

In order to enable SMES in the manufacturing sector to grow and generate jobs, there must be a coordinated strategy of solutions to alleviate their credit constraints. This should entail developing a mix of banking and non-banking financial services that are reliable, accessible and interconnected. This set of solutions should also be accompanied by efforts to increase the profitability of SMES, especially those in the manufacturing sector, through enhancing the business environment's taxation system, and the speed and cost of bureaucratic procedures. The following section puts forward some suggestions based on the above analysis of the national context, and other countries' experiences.

Evaluate Funding Initiatives

There is a pressing need for the evaluation of the various SME financing programs. Even though several meta evaluations of SME financing programs in developing countries have been carried out, very few have evaluated programs that specifically targeted employment growth at firm level (Kumar 2017). To our knowledge, in Egypt, no impact evaluation of SMES financing programs on output, employment, firm performance, wages or productivity has been implemented or has been made available to the research community. It is thus necessary to conduct systematic impact evaluation of the SMES programs aimed at facilitating access to finance. This will enable the identification of problems, which in turn will help to amend future programs.

Moreover, despite the CBE's 2016 stipulation that banks are required to allocate 20% of their capital/portfolio to SME loans, it is not clear whether or not banks have met this stipulation. There is no data to verify whether commercial and non-commercial banks have reached this threshold, but according to interviews, there was

mixed evidence in this regard. Interview results indicated that the percentage of the banks' capital used as loans to SMES might still be substantially lower than 20% (authors' interview, May 12th and June 8th 2020), even though one national bank recently reported that it was able to reach this quota (authors' interview, June 25th 2020). Other interviewees confirmed that it was difficult for banks to reach out to small businesses, as the risks and costs that banks face while dealing with small firms, especially those in the manufacturing sector, remain high (authors' interview, October 19th 2020). [233]

Another necessary policy is the development of quantitative data on loans directed to SMES to assess the effectiveness of these initiatives.

Better Targeted SME Finance Programs

Programs that facilitate access to finance around the globe were most effective for credit-constrained firms that are able to use credit efficiently (Kersten et al. 2017). SME finance programs need to be better targeted to firms that are credit-constrained, particularly in the manufacturing sector, and firms that have the potential to grow or to make effective use of the financing. Previous research suggested that the potential to grow can be examined on the basis of past profitability (Banerjee, Cole, and Duflo 2004), whereas the efficient use of financing can be reflected by the ability to export (Kersten et al. 2017).

Table 6 shows that in Egypt, small firms (5–19 workers) with annual sales between EGP 500,000 and 1 million, and those between EGP 1 million and 10 million, were the most likely to be credit constrained. These firms make up an important share of all small firms in the manufacturing sector (table 5).

Although the segment of small firms with annual sales between EGP 1 million and 10 million saw a rise in their share over time, reaching 48% of small firms (table 5), and were eligible-in theory-for the CBE directed lending program, they became less likely to take a loan in 2020 (6.9%), compared to 2013 (10.5%) and 2016 (9.1%) (table 7).

Therefore, it is crucial to prioritize funding to the segments of

TABLE 6 Percentage of Small and Medium Manufacturing Firms Perceiving Finance as a Major or Very Severe Obstacle

Annual sales (EGP)	Small (5–19 workers)			Medium (20–99 workers)		
	2013	2016	2020	2013	2016	2020
10,000–200,000	43	31	27			
200,001–500,000	39	33	31			
500,001–1,000,000	29	18	38	43	51	65
1,000,001–10,000,000	32	34	36	27	35	25
10–20 million				23	32	14
20–50 million				20	27	9

NOTES Based on ES data (https://www.enterprisesurveys.org).

TABLE 7 Percentage of Small Firms (5–19 Workers) who Took a Loan in the Previous Fiscal Year for Selected Annual Sales Categories

Annual sales (EGP)	2013	2016	2020
10,000–200,000	11.2	4.8	7.1
200,001–500,000	3.8	3.7	3.5
500,001–1,000,000	6.1	11.4	5.7
1,000,001–10,000,000	10.5	9.1	6.9

NOTES Based on ES data (https://www.enterprisesurveys.org).

[234]

firms most exposed to funding constraints and are most likely to use credit in an efficient way, based on their past profitability and the strength of their supply chain. These include companies whose annual business turnover is between EGP 500,000 and one million (the upper bracket of micro–enterprises), as well as small manufacturing enterprises with an annual business turnover between EGP one million and 10 million (the lower bracket of small enterprises). Such loan programs should be regularly assessed and potentially revised every two or three years, depending on their results in reaching the right segment and their effects on employment, output and firm performance.

Egypt also has room to implement finance programs targeted to innovation, R&D or technological upgrading, especially in the manufacturing sector. The international evidence shows that these programs result in positive impacts on firm performance and revenue,

which increase with firm size and loan size (Kersten et al. 2017). The effect of these programs is most beneficial for large, exporting firms or small, new R&D intensive firms. While the new MSMES law specifies that the industrial sector constitutes one of the key sectors of MSMES, focus should be on the sectors that are most intensive in labor, more tradable, and rapidly growing in terms of job creation. For instance, some of the most employment-generating manufacturing subsectors also have a large share of SMES, which include food, electrical equipment, textile and pharmaceutical sectors.[8]

[235]

Financial Literacy Training

In general, small and/or informal enterprises lack adequate financial education necessary to apply for formal funding, or to use efficiently the loans they receive, regardless of loan type. They can also hold multiple books (Malhotra et al. 2007). Therefore, it is crucial to provide owners of small firms and their staff, especially accountants, with financial literacy training.

The example of the Uwezo fund in Kenya sheds light on the conditions of a successful finance training program, aiming to generate productive self-employment for targeted groups, namely youth, women and the disabled (Mutiso and Muigai 2018). Emily (2016) noted two important conditions for the success of such programs. First, it is crucial that the training takes place before enabling access to funds, to reduce the chance of misuse. Second, the training should cover a diverse range of topics essential to business management while focusing on financial literacy topics.

It is also necessary to combine directed loan programs with business development services (BDS), such as speeding licenses, connections with other/bigger suppliers and financial training for staff. Moreover, to improve and facilitate the ease of access to BDS in Egypt, leveraging digital financial and non-financial transformation is important. A website and/or an online platform is strongly needed, containing all papers needed to establish a business, apply for loans, submit tax statements, build financial statements and

[8] See online appendix figure 4 (https://emuni.si/ISSN/2232-6022/15.217-244a.pdf).

benefit from non-financial services and various training programs offered in the market. This online platform should include all resources in the business domain.

[236] *Developing Banking Services*

As shown in table 4, an increasing share of firms-particularly small firms-do not take loans, because of collateral requirements. Therefore, the law allowing banks to use moveable assets as collaterals is an important step towards easing the process of providing adequate collateral to the bank. Although the law was made effective in March 2018, banks were not adequately capable of lending against moveable assets due to several challenges, including the pricing process of these assets, the timely liquidation in case of defaults, and the weak insurance environment (authors' interview, October 20th 2020). Therefore, efforts are needed to activate and better operationalize this law by creating a collateral registry, improving the regulatory environment and adopting timely measures for liquidation to encourage banks to lend against moveable assets.

Another mechanism by which the government could facilitate access to finance for formal firms who lack qualifying collateral assets is a partial credit guarantee program. In general, banks perceived guarantee funds as the most influential programs in access to finance, more so than interest subsidies, direct credit programs, and regulatory subsidies such as those allowing lower provisions (Beck, Demirguc-Kunt, and Levine 2005). These programs should encourage banks to lend to small firms as the risk of default is partially assumed by the government. As the loan is only partially covered by the government, banks assume some risk and still have the incentive to undertake a credit investigation, while firms are incentivized not to take excessive risk. It is crucial to verify the success of these credit guarantee programs in extending the outreach of banks to small firms that have not borrowed previously, rather than providing the banks with an option for cheaper loans for their existing clients. One successful example is the partial guarantee fund (NGF) in Colombia, where beneficiary firms from this program expanded more in terms of output and employment than their non-

beneficiary counterparts (Arráiz, Meléndez, and Stucchi 2014). With the CBE funding initiatives approaching their end, it is highly recommended that the government starts piloting a partial credit fund guarantee that – if appropriately designed and rigorously monitored and evaluated – could spur a leap in access to finance, growth and sustainability among small firms. [237]

Moreover, in order to select the firms most likely to use the credit efficiently, bank employees should be well trained to conduct thorough credit analysis and check said firms' past performance, via receiving the appropriate credit course.

New Areas of SME-Adapted Non-Banking Financial Services

Factoring represents a potential area of opportunity for small industries. When supplying for large buyers, small suppliers are compelled to wait before receiving their payments from these buyers. Factoring is when small suppliers 'sell' their invoice (known as accounts receivable by the seller) to a factor, usually a bank or a financial institution. This factor purchases the accounts receivable at a lower price (discounted by an interest rate in addition to service fees). Then the factor collects the payments from the buyers. Reverse factoring occurs when the factor pays the buyers' invoice to the suppliers in a shorter time frame in exchange for a discounted price. It is an approach of factoring that works better in contexts of high fraud or where credit information is scant, because it requires very little information about the buyer (Beck, Demirguc-Kunt, and Levine 2005; Malhotra et al. 2007). Hence it is not a lending technique, but a tool for providing immediate cash flows to small-sized suppliers in return for their production.

Factoring is still underdeveloped and not well known among enterprises (De Vries 2004) despite evidence of its success in many countries. It represents an important tool for small exporters, since they usually need to wait a long time before receiving their payables (Auboin, Smythe, and Teh 2016). Vasilescu (2010) showed that while textiles and clothing sectors were the industries which benefited the most from factoring, other manufacturers like those of industrial and farm equipment, office equipment, electronics and processed

food are also likely to use factoring services. Klapper (2006) and Malhotra et al. (2007) point to the use of digital channels as one of the most important lessons learned in this program. Providing factoring services online helped reduce the cost and time of transactions.
[238] In Egypt, factoring is still at an embryonic stage. However, according to interviews with experts, it is increasing and can be a promising option (authors' interview, June 15th and October 6th, 14th, 20th, and 25th 2020).

Leasing also represents another alternative financing solution for SMES. Leasing is a means of non-bank financing in which a company (the lessee) can use an asset provided by an intermediary (the lessor) in exchange for regular payment for a specified period of time. The asset can be machinery, equipment, vehicles, and properties. At the end of the lease period, depending on the terms of the contract between the two parties, the asset may be returned to the lessor, be transferred to the lessee, or sold to a third party (International Finance Corporation 2017; Kraemer-Eis and Lang 2012).

Contrary to a bank loan, which is guaranteed by collaterals and the firm's credit history, leasing relies on the lessee's cash flows and profit created by the use of the leased asset rather than by the ownership of the asset (Kraemer-Eis and Lang 2012). In the event of default or bankruptcy, the lessor can quite easily recover the asset, which remains its property during the contract period (Mol-Gómez-Vásquez, Hernández-Cánova, and Köeter-Kant 2020; Ramalho et al. 2018). For these reasons, leasing is particularly interesting for young firms and SMES, which often face difficulties in obtaining bank credit due to insufficient guarantees and/or short credit history (Kraemer-Eis and Lang 2012). Mol-Gómez-Vásquez, Hernández-Cánova, and Köeter-Kant (2020) noted that in the European context, leasing is an adequate alternative financing technique for less developed countries, as banks can be more risk-averse when the regulatory and legal frameworks are relatively weak. Leasing could also facilitate the formalization of SMES by creating a credit record that could afterwards be used when applying for a bank loan (Ramalho et al. 2018).

Although leasing has experienced a strong growth over the past fifteen years in Egypt, its volume of activity remains marginal. The various FRA reports[9] have nevertheless shown that leasing is more and more used to finance the purchase of land and real estate while its financing of capital equipment is declining.[10] This trend is ex- [239]
plained by the higher risk associated with capital goods, particularly its depreciation value, unlike real estate whose value is strongly rising in Egypt and consequently preferred for leasing (authors' interview, October 25th 2020). It is therefore crucial that equipment needs in the manufacturing sector are assessed and that equipment leasing in particular is supported and incentivized.

Thus, leasing and factoring can play a substantial role in easing finance constraints and as an alternative and a complementary means to banking finance. International Finance Corporation (2017) highlighted three lessons learned from the practice of leasing in Africa over the past ten years relevant to the Egyptian context. First, dialogue between the different actors (central bank, regulatory entities, financial institutions, SMES, and researchers) is crucial in order to determine what are the obstacles (in terms of regulatory constraints, risks of recovering lease assets in the event of default) for the development of leasing finance. Second, the development of leasing finance must be part of a national strategy and receive governmental financial support (as is the case in Cameroon and Ethiopia). Third, an assessment of equipment needs specific to the manufacturing sector would improve the practice of leasing.

CONCLUSION

Although SMES in Egypt encounter many difficulties (informality, regulatory constraints, access to the international market, etc.) limiting their development, recent data from the ES clearly identify insufficient access to finance as a major constraint. Moreover, the literature clearly shows that larger access to finance not only contributes to the growth of SMES, but also to employment growth at

[9] See https://fra.gov.eg.
[10] See online appendix figure 3 (https://emuni.si/ISSN/2232-6022/15.217-244a.pdf).

the firm level. Therefore, the recent financing initiatives for SMEs on the part of the CBE and the MSMEs law appear encouraging. However, these initiatives do not seem to have resulted in a full relaxation of the SME financing constraint. This paper highlights the
[240] fact that the CBE financing initiatives were not appropriately directed towards the most constrained companies. Moreover, the unified definition of MSMEs, based solely on the business turnover and paid capital without accounting for the firm's number of employees, can introduce biases of access to finance in favor of relatively large enterprises.

To be effective, financing programs should target the most constrained SMEs which demonstrate growth potential. The smallest companies among SMEs (whose annual business turnover ranges between EGP 1 and 10 million) being the most financially constrained should therefore have priority. But lending to these SMEs also represents a relatively higher cost and risk for banks. To overcome this, it is necessary to train bank employees in the management of credit applications specific to SMEs. There are also a number of manufacturing sectors within these enterprises that are more promising than others and should be better targeted. The government of Egypt ought to also look at other ways of supporting these enterprises financially, whether by introducing a partial credit fund guarantee program or encouraging factoring or leasing services for small enterprises. These solutions have had a positive impact in some countries and are considered viable options for the Egyptian context. Equally crucial is the need to combine direct loan programs with business development services (BDS), such as speeding licenses, connections with other/bigger suppliers and financial training for firms.

Finally, the little evidence on the impact of the recent CBE financing program necessitates regular impact evaluations of SME finance programs, which aim to facilitate their access to finance.

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IJEMS | SCIENTIFIC ARTICLE

Services Liberalization and Global Value Chains Participation: Evidence from Egypt

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With the growing 'servicification' of the manufacturing sector, efficient and competitive services are key to developing countries' engagement in today's production structure relying on global value chains. The objective of this paper is, therefore, to assess the impact of restrictive services trade policy on manufacturing firms' participation in global value chains by combining data from the Services Trade Restrictiveness Index from Jafari and Tarr (2017) with Egyptian firm-level data from the World Bank Enterprise Surveys. The paper uses a novel multi-tiered approach introduced by Dovis and Zaki (2020) to measure different degrees of firms' participation in global value chains that extend beyond simple two-way trade. Results from the empirical exercise suggest that services restrictions reduce the likelihood of manufacturing firms' participation in global value chains. This impact is more pronounced for larger firms and for more complex forms of global value chain integration involving trade, international certification, and foreign ownership.

Key Words: manufacturing sector, servicification, foreign direct investment, services trade restrictiveness index

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INTRODUCTION

Since the early 2000s, global production and trade are dominated by value chains. Although other renowned terms such as fragmentation and specialization are often used in reference to global value chains (GVCs), the latter is a more complex phenomenon that extends beyond trade in inputs and outputs according to countries'

comparative advantages. GVCS are characterized by an intensive international exchange of production-related 'activities' or 'tasks,' services, technology, and know-how among firms within the same industry across the globe (Baldwin 2011; The World Bank 2020;
[246] Taglioni and Winkler 2016).

Services play a crucial and multi-faceted role in the success and expansion of manufacturing value chains. First, services are necessary inputs across all stages of the manufacturing production and exports (Low and Pasadilla 2015; Heuser and Mattoo 2017). Today, the share of services in the value-added of manufacturing exports exceeds 30 % (OECD 2020; 2013; Miroudot 2017). Second, efficient and timely services such as transport, telecommunications, and business services are crucial for the coordination and management of tasks between firms along GVCS (Francois, Manchin and Tomberger 2015; Lanz and Maurer 2015; Kowalski et al. 2015). Third, as part of this growing 'servicification' of the manufacturing sector, firms can increase their competitiveness and secure market niches by offering services and manufacturing goods in differentiated and innovative 'bundles' or 'solutions' (Miroudot 2019; 2017; OECD 2017; Thangavelu, Wang, and Oum 2018).

The crucial role services play in GVCS and the increasing servicification of the manufacturing sector have important policy implications, especially for developing countries where services trade restrictions are persistently high: more open services trade policies are likely to increase competition in the domestic market, introduce new services, and improve the quality of existing services. This would benefit the manufacturing sector in many ways: first, efficient services inputs would generate productivity gains in downstream manufacturing activities and enable manufacturing firms to enter the exports market or to increase their exports. Firms may also be able to upgrade towards more sophisticated products along GVCS, which could generate shifts in their countries' comparative advantage (Heuser and Mattoo 2017; Van der Marel 2016). Second, manufacturing firms in developing countries would benefit from efficient transport and communication services to coordinate their tasks with other firms across the globe. Finally, firms could also

increase their international competitiveness by targeting specific niches with differentiated product solutions, including innovative and high-quality services.

In the current global context, the world is witnessing changes in GVC patterns in the form of near-shoring or re-shoring of production. Developing countries like Egypt have, therefore, an opportunity to successfully attract repatriated FDI and act as a regional manufacturing hub in the MENA region and the Euro-Mediterranean space. Given the size of the Egyptian economy, the relatively diversified manufacturing sector, and the relative abundance of labor, the country has a promising opportunity to support its manufacturing sector and to deepen its participation in global and regional value chains by creating favorable market conditions and lifting unnecessary and burdensome services restrictions. [247]

The objective of this paper is, therefore, to assess the impact of services trade policies on Egyptian manufacturing firms' participation in GVCS. Using pooled data on Egyptian manufacturing firms from the World Bank Enterprise Surveys (2013, 2016, and 2020, see https://www.enterprisesurveys.org), I estimate the impact of services policy restrictions on the likelihood that a firm participates in a GVC. Following Dovis and Zaki (2020), I use several indicators of GVC participation that range from simple two-way trade to more complex forms involving foreign ownership and international certification of firms. Firm heterogeneity is accounted for by introducing an interaction between services policies and firm size. Overall, the results suggest that services restrictions reduce the likelihood of Egyptian firms' participation in GVCS. This effect is more pronounced for complex levels of GVC integration involving foreign investment. Finally, services restrictions are found to matter more for larger firms, given that these are more productive, and hence more likely to integrate in GVCS.

The contribution of this work is threefold: First, the paper builds a bridge between two active literatures on GVCS and trade in services by contributing to the relatively small, but growing literature on services liberalization and its impact on firms' GVC participation. Second, the choice of Egypt as a MENA country contributes

to the scarce literature on trade and trade policy in the region and makes the case for potential benefits of services liberalization in developing countries. Third, data limitations make it difficult to measure GVC participation in developing countries. Against this back-
[248] drop, I adopt a comprehensive definition of GVC participation following the novel approach introduced by Dovis and Zaki (2020). This approach suggests four GVC participation levels ranging from simple two-way trade to more complex forms involving international certification and foreign ownership. This multi-tiered definition responds to the active literature on GVCS, where trade and FDI are considered two complementary rather than substitute features of GVCS. Moreover, for firms to export and expand their export destinations, foreign certification is required to guarantee commitment to international standards. Therefore, the indicators of GVC participation take into account these additional dimensions. To the author's knowledge, this paper is the first attempt to explore the nexus between services policies and participation in GVCS using this definition.

The remainder of the paper is organized as follows: Section 2 is devoted to the concept of GVCS and the literature on services trade liberalization and GVC participation. Section 3 presents some stylized facts about the state of firms' GVC participation in Egypt and across different regions, in addition to the actual state of services restrictions. Section 4 describes the data and the methodology used for the empirical investigation. The main findings are discussed in Section 5. Finally, Section 6 concludes and underlines the main policy implications.

LITERATURE REVIEW

GVCS and GVC Participation: An Overview

GVCS can be defined as the full range of activities (design, production, marketing, distribution, and customer support) that firms and workers across the globe do to bring a product from its conception to its end use and beyond (Gereffi and Fernandez-Stark 2011; De Backer and Miroudot 2013). GVCS can also be defined as interconnected functions and operations through which goods and

services are globally produced, distributed, and consumed (Kano, Tsang, and Yeung 2020). While the term fragmentation is often used interchangeably with that of GVCS, there are fundamental differences between both. First, specialization and the resulting fragmentation is not (only) in products (inputs, intermediate goods, and final products), but rather in tasks or activities. Hence, not only goods, but also services, technology, and know-how are internationally exchanged (OECD 2017). Second, this new form of fragmentation results into hyper-specialization and a strikingly higher level of geographical dispersion of activities within a single industry (De Baker and Miroudot 2013). Third, GVCS reveal stronger forward and backward linkages as compared to fragmentation in the past. Fourth, GVCS are characterized by strong firm-to-firm relationships, as those who trade are not countries, but rather firms (The World Bank 2020). In other terms, GVCS can be thought of as cross-border 'factories' where tasks and business functions are distributed globally or regionally (Taglioni and Winkler 2016).

[249]

There are two types of GVCS. The first type is a vertical chain or a 'snake,' where each country imports inputs to process and export them later to the next firm, adding value along the chain in a sequential way. The second (most common) form of GVCS is a network or a 'spider,' where different components (goods and services) of the final product are assembled from different parts of the world with no specific order (Baldwin and Venables 2013; OECD 2013).

As a result of the increase in GVCS, nearly 70% of today's international trade takes the form of trade in raw materials, parts, components, and services (OECD 2020). Several factors explain the rise of trade along GVCS over the past decades. The first relates to the reduction in trade costs resulting from liberalization of trade and investment. The second factor is the rapid technological progress in backbone services such as transport and telecommunications, which facilitated the management and coordination of globally dispersed tasks and activities. The third driver is the entry of developing countries as new players into the global economic scene: the emergence of GVCS lowered barriers to entry for developing countries and offered them a fast-track industrialization as they can

'plug' into GVCS and specialize in specific activities without having to establish the entire chain locally (Nano and Stolzenburg 2021). Developing countries taking part in GVCS have an opportunity to enter new industries and to benefit from the transfer of technology
[250] and know-how to upgrade their exports. Additional benefits include the motivation to adopt international standards to increase competitiveness and gain access to foreign markets and capital. GVCS also carry an opportunity for smaller economies to expand their market and benefit from economies of scale, and for less diversified economies to find niches in the global economy. Finally, SMES in developing countries can benefit from access to global markets. However, this largely depends on the overall investment climate and the availability of high-quality backbone services (Cusolito, Safadi, and Taglioni 2016).

Indicators of GVC participation are currently available for OECD countries and a growing number of non-OECD countries. GVC participation can be measured using forward and backward linkages. Forward (downstream) linkages are measured as the share of a country's value added in the exports of another country (indirect value added in the exports to a third country). Backward (upstream) linkages are the share of intermediate imports in a country's exports, or the share of foreign value added in a country's total exports. The sum of both types of trade constitutes the country's total participation in GVCS (De Backer and Miroudot 2013).[1] GVC intensity is measured as the share of a country's total GVC participation in its total trade (Qiang, Liu, and Steenbergen 2021).

The complexity of measuring trade along GVCS and the lack of consistent data makes it challenging to construct indices of GVC participation for developing countries. Thus, Dovis and Zaki (2020) introduce a new integral measure of GVC participation that allows for the analysis at the firm level. This measure consists of 4 levels of GVC integration, ranging from simple to more complex forms. First,

[1] The GVC participation indicators are available for a total of 66 countries. For more information on the GVC participation index, see the Trade in Value Added (TiVA) database (http://oe.cd/tiva).

firms that import and export simultaneously are likely engaged in GVC activities. Second, firms engaged in GVCS trade may also opt for international certification. This is particularly relevant for firms that are vertically integrated in GVCS. Third, firms that export and import are also likely owned by foreign entities to serve as their exporting platforms. Finally, the deepest form of GVC integration includes two-way trade, international certification, and foreign ownership. This approach is discussed in detail in the third section and adopted in the empirical estimation in the fourth section. [251]

Services Liberalization and Manufacturing GVCS

There are several channels through which services liberalization can affect manufacturing GVCS. First, services are the 'glue' that holds fragments of GVCS together (Francois, Manchin and Tomberger 2015; Lanz and Maurer 2015). For example, transport and telecommunications facilitate transactions through space, while business services facilitate transactions through time (Kowalski et al. 2015). An early work by Deardorff (2001) highlights that the more trade is taking place though fragmentation, the greater the benefits from liberalizing trade in services. Thus, the additional cost from restrictive services regulations can act as an impediment to the sustainability and smooth functioning of GVCS.

Next, services are necessary inputs across all stages of the manufacturing value chains, ranging from pre-production services (such as research and design) to producer services (such as engineering services) and services supporting the delivery of goods at the end of the value chain (such as marketing and distribution services) (Low and Pasadilla 2015; Heuser and Mattoo 2017). Since manufacturing value chains are becoming increasingly fragmented at the global level, services embedded in goods are also exported along GVCS. Services represent more than one third of the total value-added of manufacturing exports (OECD 2020; 2013; Miroudot 2017) and account for 60% of the value-added of foreign affiliates of multinational enterprises around the world (Andrenelli et al. 2018).

Lastly, there is an increasing trend of 'servicification' of the manufacturing sector. Servicification can be understood not only as the

increased use of domestic and imported service inputs in manufacturing, but also the increased bundling of services and manufactured goods together as differentiated and competitive 'solutions' (Miroudot 2017; 2019; OECD 2017; Thangavelu, Wang, and Oum
[252] 2018). Since barriers to trade in services are higher than those in goods, servicification means that manufacturing firms face higher trade barriers by intensifying their use of services. Thus, high-quality and cheap services increase manufacturing firms' productivity and competitiveness and potentially increases firms' participation in GVCS. Introducing new services, and improving and expanding the existing upstream services through liberalization and competition leads to productivity gains in downstream manufacturing activities. These gains allow firms to enter GVCS, to increase their manufacturing exports, or to upgrade towards more sophisticated products along the value chain. Improved services not only increase productivity, but can also stimulate possible shifts in countries' comparative advantage (Heuser and Mattoo 2017; Van der Marel 2016).

The empirical literature on services liberalization and GVC participation is scarce. Most studies focus on indicators of manufacturing performance, such as productivity and/or exports. For example, a positive impact of improvements in upstream services on productivity downstream manufacturing firms was found in several studies – Arnold et al. (2016) for Indian firms, Arnold, Javorcik, and Matoo (2011) for Czech firms, Arnold, Matoo, and Narcisso (2008) for 10 countries in Sub-Saharan Africa, Shepotylo and Vakhitov (2012) for Ukrainian firms, Bas and Causa (2013) for Chinese firms, Fernandes and Paunov (2008) for Chilean firms, and Winkler (2018) for a group of 105 low- and middle-income countries. Some studies also interact services reforms with the quality of institutions to highlight the key role of the latter in creating manufacturing productivity gains through services reforms (Beverelli, Fiorini, and Hoekman 2017; Fiorini and Hoekman 2017; Hoekman and Shepherd 2017). Another group of studies considers other performance indicators, such as exports and exports differentiation. For example, Bas (2014) found that services reforms positively affect manufacturing

exports at the extensive and intensive margins in India. The effect is stronger for initially more productive firms. Similarly, Karam and Zaki (2020) found that for MENA countries, service protection has a negative and significant effect on the extensive margin to trade, but does not affect the firm's intensive margin. The effect of service barriers is more pronounced for small firms and for firms operating in high value-added sectors. Liu et al. (2020) found a positive relationship between financial and business services development and the exports of manufacturing sectors that use these services intensively. Andrenelli et al. (2018) demonstrated that services restrictions are associated with lower output of foreign affiliates in the manufacturing sector and affects firms' decisions to engage in exports. Ariu et al. (2019) found that increased servicification allows Belgian manufacturing firms to increase export revenues by 25%. Francois and Woerz (2008) found significant and strong positive effects from increased business service openness on exports of industries like machinery, motor vehicles, chemicals, and electric equipment in OECD countries.

A smaller yet growing body of literature examines the impact of services liberalization and GVC participation using more GVC-specific measures. For example, Nordås and Rouzet (2015) measured GVC participation for 40 countries by taking into account bilateral exports, imports, and intra-industry trade using the OECD Trade in Value Added (TiVA) Database. The gravity results suggest a negative relationship between services restrictions and trade performance of the manufacturing sector. A recent study by Lee (2019) relied on bilateral GVC trade data from the OECD Inter-Country Input-Output tables for 61 countries and 37 sectors. Lee (2019) used a gravity model to estimate the impact of services trade agreements on participation in manufacturing GVCS. GVC participation is measured using three indices: gross exports of intermediate products, backward GVC exports, and forward GVC exports. Results suggest that having a services agreement is associated with high gross exports of intermediate goods, and with higher GVC trade by developing countries. Biryukova and Vorobjeva (2017) assessed the impact of services restrictions (measured by the OECD Services Trade

Restrictiveness Index) in nine services sectors on GVC participation (measured by the GVC participation index) in BRICS countries. They found that liberalizing transport and financial services in Russia, Brazil and South Africa is likely to increase their GVC
[254] participation and upgrade along the value chain. For India, Goldar, Banga, and Banga (2018) assessed the impact of services imports on the manufacturing sector's performance at the country and industry level using the TiVA/World Input Output Database. The analysis is supplemented by firm-level data to assess the impact of imported services on firms' exports. Their findings suggest that servicification increases exports extensive and intensive margins at the firm-level.

STYLIZED FACTS

Services Trade Restrictiveness in Egypt

The conclusion of the General Agreement on Trade in Services (GATS) opened the door for international services negotiations. Barriers to trade in services are however, profoundly different from those affecting trade in goods. Due to the different and multifaceted nature of services provision and trade, their intangibility and proximity requirements, and the significant movement of capital and natural persons they entail, barriers often arise from behind-the-border regulatory policies that discriminate against foreign services, foreign service providers, and foreign capital. Unlike tariffs on goods, barriers to trade in services are rather qualitative and therefore more challenging to measure. To overcome this problem, qualitative data on discriminatory regulations affecting the different modes of services provision must be translated into a quantitative index that is comparable across countries. One of these measures is the Services Trade Restrictiveness Index (STRI)[2] developed by the World Bank for 103 developing countries and 5 major services sectors that are important inputs in manufacturing production and vital for international trade. These five broad sectors are profes-

[2] Data on the STRI scores and countries' regulatory restrictions can be extracted from the Services Trade Restrictions Database (http://i-tip.wto.org/services/default.aspx).

sional, finance, telecommunications, transport, and retail services.[3]

To construct the STRI, information on discriminatory regulations affecting trade in services are collected using questionnaires[4] and are categorized by mode of supply.[5] Each policy measure is assigned a score ranging from 0 to 1 based on its degree of restrictiveness, with 1 being the most restrictive, 0 meaning the absence of restrictions, and intermediate values indicating the presence of relative restrictions to foreign supply. For each of the 4 modes of supply, a score is calculated to illustrate the restrictiveness of the policy regime per mode (for example, an STRI score of 1 in mode 3 means that a given service sector is completely closed to foreign investment). [255]

To estimate the overall policy restrictiveness in a service sector, a weighted average of the 4 modes is calculated. Larger weights are assigned to more relevant modes of provision of a specific service. An overall index score of 1 is the most restrictive and indicates that the market is completely closed to foreign service provision across the four modes of supply, and a score of zero means the absence of restrictions (a completely open regime). Intermediate scores reflect different levels of policy restrictiveness per service sector. For example, a service market may be open with minor restrictions, or virtually closed in the presence of substantial restrictions.

Table 1 presents the STRI for Egypt and six regions by sector. On average, the MENA region has the most restrictive services trade policies in the world. The STRI is consistently higher than other regions across the five services sectors. A second observation is that

[3] The STRI is also available for 11 subsectors included under these 5 broad service categories. These are: banking, accounting, legal, insurance, fixed-line, mobile-line, maritime transport, air transport, road transport, rail transport, and retailing services.

[4] For more information on STRI methodology, see Borchert, Gootiiz, and Mattoo (2012).

[5] Services modes of supply are cross-border trade (mode 1), consumption abroad (mode 2), commercial presence/FDI (mode 3), movement of natural persons (mode 4). For more details on services modes of supply, see https://www.wto.org/english/tratop_e/serv_e/cbt_course_e/c1s3p1_e.htm.

TABLE 1 STRI by Sector: Egypt and Regional

Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Professional	0.815	0.380	0.550	0.385	0.685	0.590	0.500
Transport	0.548	0.290	0.378	0.340	0.508	0.508	0.305
[256] Financial	0.450	0.180	0.200	0.230	0.365	0.275	0.250
Telecoms	0.380	0.225	0.330	0.240	0.450	0.415	0.395
Retail	0.410	0.140	0.160	0.160	0.320	0.250	0.170

NOTES Column headings are as follows: (1) Egypt, (2) Europe and Central Asia, (3) East Asia and Pacific, (4) Latin America and Caribbean, (5) Middle East and North Africa, (6) South Asia, (7) Sub-Saharan Africa. Based data from Jafari and Tarr (2017).

Egypt's STRI scores are higher than the MENA average score, except for the telecommunications sector. With an index value of more than 0.81, the professional services sector is nearly closed to foreign competition. Restrictions in the transport sector are also higher than other regional STRI averages. An index of 0.54 suggests that major restrictions exist for foreign services or service providers. The state of restrictions on the transport sector in Egypt is comparable to the MENA and South Asia regions (STRI of 0.5). The international provision of financial services in Egypt is also relatively restricted as compared to the MENA region and to other regions in the world. At a regional level, Europe and Central Asia have the lowest STRI for financial services, indicating that the sector is virtually open to foreign trade. The financial services sector is also relatively open in East Asia and Latin America and the Caribbean, with an STRI value below 0.25. In telecommunications, the STRI score for Egypt (0.38) is lower than the STRI averages in the MENA region (0.45), in South Asia (0.41), and in Sub-Saharan Africa (0.39). Again, Europe and Central Asia has the lowest STRI score, suggesting an open regulatory regime for the provision of foreign telecom services. Finally, the retail sector in Egypt has a score of 0.41, suggesting that nontrivial restrictions are in place. The retail sector is relatively open in Europe and Central Asia, East Asia and Pacific, Latin America and the Caribbean, and Sub-Saharan Africa (STRI ranging from 0.14 to 0.17).

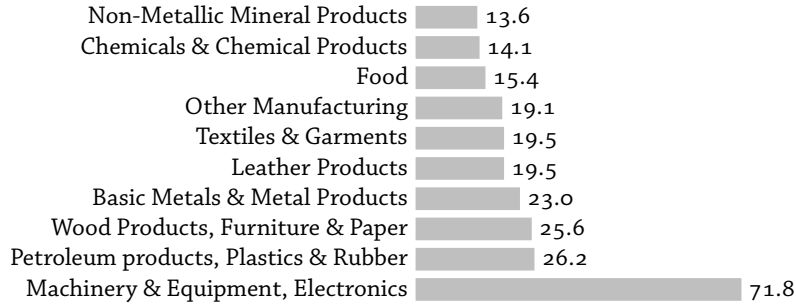
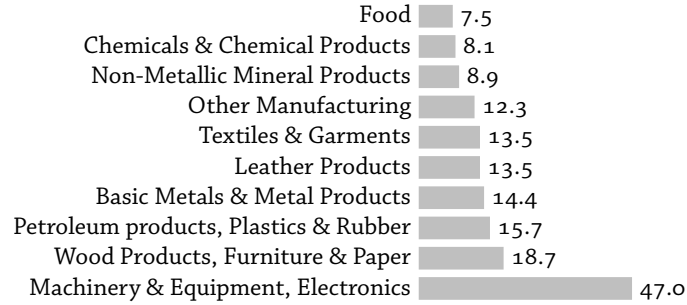


FIGURE 1 Weighted STRI by Sector (based on data from Jafari and Tarr 2017 and the World Input Output Database)

For a better understanding of the impact of these services restrictions on the manufacturing sector in Egypt, figure 1 shows the weight of the STRI in 10 manufacturing sub-sectors. Following Karam and Zaki (2020), the weighted average of services restrictions on the manufacturing sector is obtained by multiplying the STRI for each services sector by its corresponding weight in the manufacturing sector from the Input/Output Table. The weight of services restrictive policies as featured by the STRI is highest for machinery and equipment, electronics, and vehicles (71.8). In fact, these industries rely heavily on producer services. When these are subject to restrictive policy measures, manufacturing sectors that use these services intensively must bear this additional cost of restriction. For the rest of the manufacturing sectors, the weight of services restrictions is significantly lower than for machinery and equipment (23, 25.6 and 26,2 for basic metals, wood products and furniture, and petroleum products, plastic, and rubber respectively). The lowest weight of services restrictions is in non-metallic mineral products, chemicals, and food products, that have relatively a lower contribution of services.

Another measure of services policy restrictiveness is the ad-valorem equivalent (AVE). The AVE is an economically interpretable measure that reflects the impact of the different restrictions on trade in services on a measure of price or cost.[6] Jafari and Tarr

[6] Estimations of services AVES follow two main methodologies. The first one is the



[258]

FIGURE 2 Weighted AVE by Sector (based on data from Jafari and Tarr 2017 and the World Input Output Database)

(2017) use the STRI database to produce services AVES of trade in the abovementioned service sectors. Following the pioneering work of the Australian Productivity Commission (APC)[7] and its extensions, they econometrically estimate the impact of the STRI on a measure of quantity or price of a given service, while controlling for other explanatory variables. Using a partial equilibrium framework, the AVE is estimated as the difference between the 'free trade' price and the price in the presence of restrictions. If necessary, price impacts of policy restrictions are first derived from quantity measures using price elasticities of demand.

Figure 2 depicts the ad-valorem equivalent (AVE) of services restrictions by manufacturing sector. Similar to the STRI, the AVE of services restrictions by manufacturing sector is obtained from the average of each service's AVE weighted by its share in the corresponding manufacturing sector. In line with the results from fig-

gravity model approach, where the estimated differences between actual and predicted levels of bilateral services trade reflect the presence of trade barriers. These are translated into an AVE using demand elasticities (for example, see Francois and Hoekman 1999; Francois et al. 2007). The second approach is to econometrically estimate the AVE using a quantitative measure of policy restrictiveness (such as the STRI) together with a set of independent variables that are thought to affect the price or cost of the service (for example, see Warren 2000; Doove et al. 2001; Dihel and Shepherd 2007). Jafari and Tarr (2017) adopt the second approach to estimate the AVES of services.

[7] For a summary of the APC work, see Findlay and Warren (2000).

ure 1, figure 2 shows that machinery, equipment, electronics, and vehicles have the highest services AVE (47%). The AVES in other manufacturing sectors are also relatively high. In wood products and furniture, petroleum products, plastic and rubber, basic metals and metal products, leather, textile and garments, and other manufactures, the AVES range between 12.3% and 18.7%. [259]

Participation of Egyptian Firms in GVCS

Measuring GVC participation is a challenging exercise in the presence of data limitations. Conceptually, it is also necessary to bring other dimensions of GVC participation into the discussion. Building on the conclusion of Gereffi and Fernandez-Stark (2011) that countries must not only integrate in two-way trade along GVCS, but also capture the full gains from GVC participation, this work relies on the multi-tiered definition of GVC participation suggested by Dovis and Zaki (2020).

According to this new definition, the basic form of GVC integration is for firms to be engaged in exporting and importing activities simultaneously. Indeed, when a given firm in a given industry both imports and exports, it is natural to conclude that this firm participates in GVCS (World Bank 2020). Another more advanced form of participation in a GVC is when a firm imports, exports, and has an international certification, especially if the firm is vertically integrated in a value chain. The third definition of GVC participation implies that a firm imports, exports, and is (fully or partially) owned by a foreign entity. Since multinational companies lead GVCS, the latter involve international trade with the company's foreign affiliates (Taglioni and Winkler 2016; Amador and Cabral 2014). Andrenelli et al. (2019) find that in GVCS, FDI and trade are not substitutes, but rather complements or parallel activities practiced by multinational firms. Finally, the most integral definition includes firms that import, export, have an international certification and foreign ownership.

Table 2 compares Egyptian firms' integration in GVCS with regional averages. Despite the proliferation of GVCS over the past decades, significant differences exist across regions. For example,

TABLE 2 GVC Participation: Egypt and Regional

Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exports and Imports	11	27	9	13	13	7	15	13
Certification	7.5	15	6	5	6	3	7	7
Foreign Capital	2	5	3	3	2	0	4	3
All measures	1.7	3	2	2	1	0	2	2

NOTES In percent. Column headings are as follows: (1) Egypt, (2) Europe and Central Asia, (3) East Asia and Pacific, (4) Latin America and Caribbean, (5) Middle East and North Africa, (6) South Asia, (7) Sub-Saharan Africa, (8) World. Adapted from Dovis and Zaki (2020); data on Egypt are from the World Bank Enterprise Survey.

[260]

Europe and Central Asia is the most integrated region across all four definitions of GVC participation. According to the World Bank (2020), Europe is also the most regionally integrated, with regional value chain linkages being four times higher than global linkages. The expansion of regional value chains was accelerated with the successive rounds of EU enlargement. East Asia is also more regionally than globally integrated. Meanwhile, Latin America, South Asia, Sub-Saharan Africa, and the MENA region are rather globally integrated.

Overall, Egyptian firms' participation in GVCS is lower than the world average for 3 out of the 4 definitions. For example, 11.1% of Egyptian firms export and import. The share is lower than the world average (13%), the equivalent share in the MENA region, Latin America and the Caribbean (13%), and Sub-Saharan Africa (15%). Firms in Europe and Central Asia are the most integrated in GVCS. According to the first definition, 27% of all firms are trading two ways.

The share of Egyptian firms participating in GVCS decreases significantly as the definition of the integration includes additional characteristics. According to the second level of GVC integration, only 7.5% of Egyptian firms are engaged in two-way trade and have an international certification. This share is slightly higher than the world average (7%) and all regional averages except for Europe and Central Asia (15%). A lower share (2.2%) of Egyptian firms import,

export, and have a share of foreign capital. This share is lower than the world average (3%) and lower than all other regions, except South Asia. The low presence of foreign ownership of trading firms could be attributed to restrictive investment regulations and to a relatively poor investment climate. Indeed, Egyptian firms reported [261] licensing procedures, access to finance and electricity, tax rates, labor regulations among the top ten obstacles facing firms investing in Egypt (Aboushady and Zaki 2019).

Finally, 1.7% of all Egyptian firms satisfies the four conditions and can be considered deeply integrated into GVCS. Again, this share is lower than the world average (2%) and as compared to all other regions, except for the MENA region (1%) and South Asia (less than 1%).

METHODOLOGY AND DATA

The objective of this paper is to estimate the impact of services restrictions on the likelihood that a manufacturing firm takes part in a GVC. In line with the framework of heterogenous firms founded by the work of Roberts and Tybout (1997), Melitz (2003), and Bernard et al. (2003), the decision of a firm to enter the exports market depends on its observed (exogenous) productivity level. Only firms whose level of productivity is initially above a certain threshold will be able to export. Hence, liberalization of services can increase productivity in manufacturing firms that use these service inputs intensively. Against this backdrop, the impact of services input liberalization on manufacturing exports through the channel of productivity has been empirically investigated (Bas 2014; Bas and Causa 2013; Karam and Zaki 2020). Along the same line, a burgeoning body of literature suggests increased participation in manufacturing GVCS at the firm level (for example, Goldar, Banga, and Banga 2018). The present study adds to this strand of the literature, where the impact of services restrictions on manufacturing firms' participation in GVCS is investigated. The linear probability model is used to estimate the following regression:

$$\mathrm{GVC}_{ikt} = \alpha_0 + \alpha_1 \ln Age_{ikt} + \alpha_2 Size_{ikt} + \alpha_3 \ln serv_{kt} + \alpha_4 t + \varepsilon_{ikt}, \quad (1)$$

where GVC_{ikt} is the probability for a firm i operating in sector k in time t to engage in a GVC. GVC is a discrete variable that takes the value of 1 if the firm engages in a GVC and zero if not. Following Dovis and Zaki (2020), the four definitions of GVC participation
[262] (GVC1 = two-way trade; GVC2 = trade + international certification; GVC3 = trade + foreign ownership; GVC4 = trade + international certification + foreign ownership), are used in separate regressions.

Age_{ikt} is the age of the establishment, measured as the difference between the year of establishment and the year of the survey. Firm age is found to be positively associated to exports. The longer the firm has been established, the more likely it is to enter the exports market (Aitken, Hanson, and Harrison 1997; Roberts and Tybout 1997).

$Size_{ikt}$ is a categorical variable that captures firm size. I adopt the World Bank definition for small (less than 20 employees), medium (20 to 99 employees), and large enterprises (100 employees and more). Larger firms are more productive, hence more likely to enter the exports market (Bernard and Jensen 2004; Melitz 2003) and eventually engage in GVCS.

The explanatory variable of interest, $Serv_{kt}$ represents restrictiveness of services policy faced by the manufacturing sector k in year t. Against the background of increasing servicification of the manufacturing sector, restrictions on international trade in services affect firms' productivity, exports, and eventual integration in GVCS (Heuser and Mattoo 2017). To construct this variable, I follow Karam and Zaki (2020) and Ehab and Zaki (2020), where services restrictions in the manufacturing sector are calculated as the sum of each service sector restrictiveness weighted by its share in the manufacturing sector. Services restrictions are captured by the STRI from Jafari and Tarr (2017) and the services shares in the different manufacturing sectors from the World Input Output Database (see https://www.rug.nl/ggdc/valuechain/wiod/).[8]

[8] It is worth mentioning that the input-output coefficients reflecting the share of services in the different manufacturing sectors are not available for Egypt in the World Input Output Database. To solve this problem, I use the coefficients of the

Hence, the variable $Serv_{kt}$ is constructed as follows:

$$Serv_{kt} = \sum_{s} \text{STRI}_{st} \text{IO}_{sk}, \tag{2}$$

where s are the services sectors, STRI_{st} is the STRI for service s in year t, IO_{sk} is the share of service s in manufacturing sector k. The five services sectors of interest are professional, financial, transport, telecommunication, and retail services. The variable $Serv_{kt}$ is calculated in the natural logarithm to capture the effect of changes in services policy measures on the likelihood of firms integrating a GVC. [263]

Given that the share of firms followed over time is small in most World Bank Enterprise Surveys, year fixed effects t are included. Errors are clustered by sector given that firms operating the same sector face the same impediments.[9]

Data on firms' participation in GVCS come from the World Bank Enterprise Survey for Egypt (2013, 2016, and 2020). The survey offers a wide scope of economic data on establishments in the manufacturing and services sectors, including data on firm age, size, exporting and importing status, foreign ownership, and international certification. Since this study focuses only on firms in the manufacturing sector, the pooled data consist of 5420 manufacturing firms. To merge data on manufacturing firms from the World Bank Enterprise Survey with data on services restrictions in manufacturing sectors from the World Input Output Database, the disaggregation of the manufacturing sectors in the World Input Output Database was adapted to the sectoral disaggregation of the World Bank Enterprise Survey.

For robustness checks, I proceed in multiple ways: initially, I use an alternative measure to capture the weight of services restrictions on manufacturing: the AVE estimated by Jafari and Tarr (2017) for

'Rest of the World' available in the database. This implies that the production technique reflected in share of services in the different manufacturing sectors are assumed to be the same across all countries included in the category 'rest of the world.'

[9] Sector specific effects were not included given the collinearity with the measure of services restrictions.

each of the five services sectors. As explained before, the AVE is an economically interpretable measure that indicates the presence of an additional cost coming from restrictive services policies in the production and trade of manufacturing goods. Similar to the
[264] STRI, the AVE of services restrictions is obtained by calculating the weighted average of services AVE in each manufacturing sector. Hence, the AVE of services in manufacturing sector k in year t is equal to the sum of each services s AVE in year t weighted by its share in manufacturing sector k.

$$\text{AVE}_{kt} = \sum_{s} \text{AVE}_{st} \text{IO}_{sk}. \tag{3}$$

Secondly, I repeat the empirical exercise using a probit analysis instead of the linear probability model. To capture services policy restrictions, both the STRI and the AVE are used as alternative explanatory variables.

Next, a categorical dependent variable GVC *status* is created to account for the different levels of GVC participation, including the absence of GVC participation (GVC *status* = 0) used as a base category. This variable is used in multinomial logit model to check for the impact of services restrictions (STRI and AVE) on the different categories of GVC integration.

Finally, I account for firm heterogeneity by extending the baseline specification to include interaction terms between firm size and the measure of services restrictiveness (weighted STRI and weighted AVE). The interaction of services restrictions and firm size is important, as larger firms are more likely to integrate in GVCS than medium or smaller firms. Hence, the effect of services restrictions is likely stronger for larger firms.

EMPIRICAL RESULTS

Baseline Specification

Summary statistics for the different levels of GVC participation and the explanatory variables are presented in table 3. The results of the baseline specification are depicted in tables 4 and 5. Table 4 presents the results using the STRI as a measure of services restrictiveness.

TABLE 3 Summary Statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
GVC1	7,786	0.111354	0.3145898	0	1
GVC2	7,786	0.075006	0.2634186	0	1
GVC3	7,786	0.021577	0.1453077	0	1
GVC4	7,786	0.016825	0.1286239	0	1
Ln(*Age*)	7,720	7.598776	0.0082966	7.498870	7.610358
Ln(STRI)	5,465	3.030347	0.3872542	2.607272	4.274266
Ln(AVE)	5,465	2.567189	0.4449048	2.009479	3.851206

Overall, the coefficients of the explanatory variables have the expected signs but are not always significant. The coefficient for firm age is only significant for GVC3 (firms that trade and have foreign capital). The longer the firm has been operating, the more likely it is engaged in two-way trade along GVCS and the more likely it benefits from foreign capital. In line with the literature on GVCS, trade and investment are complements and multinationals often seek to invest in foreign affiliates to generate additional revenue. Investors are often encouraged to acquire well-established firms that are productive enough to engage in global trade.

Being a medium-size firm is positively associated with the probability of engaging in GVCS through two-way trade (GVC1) and trade with international certification (GVC2). The coefficient is insignificant for GVC3 and is weakly significant for GVC4 including all measures of GVC participation. This is because medium firms are unlikely owned by foreign investors, as these seek to establish or acquire large size foreign affiliates to serve as a trade platform and to realize revenue gains. Therefore, the results for large firms are found to be positive and strongly significant across all definitions of GVC participation. Being a large firm increases the probability of being integrated into GVCS for all forms of GVC participation. These results are in line with the literature on heterogeneous firms, where large establishments are more productive and perform better in the global market. These firms are not only likely to be exporting and importing but are also more likely to increase their competitiveness

TABLE 4 Impact of STRI on GVC

Variable	GVC1	GVC2	GVC3	GVC4
Ln(*Age*)	−0.455	−0.231	0.598**	0.312
	(0.479)	(0.426)	(0.264)	(0.233)
[266] Medium	0.0698***	0.0511***	0.00959	0.00872*
	(0.0169)	(0.0152)	(0.00525)	(0.00453)
Large	0.285***	0.247***	0.0771***	0.0667***
	(0.0219)	(0.0149)	(0.00582)	(0.00607)
Ln(STRI)	−0.0337*	−0.0192	−0.0140**	−0.0113*
	(0.0175)	(0.0160)	(0.00593)	(0.00569)
Constant	3.591	1.814	−4.494*	−2.336
	(3.626)	(3.235)	(2.003)	(1.771)
Year dummies	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420
R-squared	0.118	0.124	0.040	0.037

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

by being intensively engaged in GVCS by complying with international standards and/or receiving foreign capital.

The coefficient of main explanatory variable of interest, the STRI, has the expected sign and is significant for 3 out of 4 definitions of GVC integration. Indeed, the higher the services restrictions, the lower the probability of firms being engaged in GVCS. This result holds for firms fully integrated in GVCS (GVC4), for firms trading two-way (GVC1) and for firms who trade and benefit from foreign capital simultaneously.

Table 5 shows the results of the baseline specification using the AVE of services as a measure for services trade policy. Overall, the results are similar to those of the STRI. The coefficient of firm age is only positive and significant for GVC3. Firm size is found to have positive and significant impact for medium and large firms across the four definitions of GVC participation. However, for medium firms, the coefficients are smaller and only significant at the 90% level for GVC3 (trade + foreign ownership) and for GVC4 (all measures of GVC participation). In the case of large

TABLE 5 Impact of AVE on GVC

Variable	GVC1	GVC2	GVC3	GVC4
Ln(*Age*)	−0.487	−0.251	0.584*	0.301
	(0.476)	(0.429)	(0.263)	(0.233)
Medium	0.0704***	0.0516***	0.00989*	0.00901*
	(0.0169)	(0.0153)	(0.00538)	(0.00466)
Large	0.285***	0.248***	0.0773***	0.0669***
	(0.0219)	(0.0149)	(0.00588)	(0.00616)
Ln(AVE)	−0.0269	−0.0181	−0.0121**	−0.0106**
	(0.0179)	(0.0124)	(0.00459)	(0.00409)
Constant	3.799	1.951	−4.401*	−2.255
	(3.600)	(3.257)	(1.995)	(1.773)
Year dummies	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420
R-squared	0.117	0.124	0.040	0.037

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

firms, the coefficients are greater in value and significant at the 99% level.

As for the effect of services restrictions measured by the AVE on GVC participation, the sign of the coefficient is as expected, but the coefficient is only significant for deeper forms of integration that include foreign ownership (GVC3 and GVC4). This is interesting, since deeper forms of GVC integration involving foreign ownership require an open and competitive services sector that allows for a smooth operation of foreign affiliates along GVCS. This result does not necessarily hold for firms trading two ways, and for those trading two ways and being internationally certified, where the coefficients are negative but insignificant. The results suggest that services liberalization matters for more complex forms of GVC participation that include foreign direct investment.

To check for the robustness of the baseline specification, the impact of the STRI and the AVE on GVC participation is estimated using probit analysis. Overall, the probit estimation produces similar outcomes as the baseline specification. For both estimations us-

TABLE 6 Impact of STRI on GVC Using Probit Analysis

Variable	GVC1	GVC2	GVC3	GVC4
Ln(*Age*)	−2.585	−1.999	13.91**	8.288
	(2.483)	(2.973)	(5.494)	(5.909)
[268]	[−0.494]	[−0.293]	[0.761]**	[0.369]
Medium	0.499***	0.583***	0.403***	0.574***
	(0.0885)	(0.126)	(0.157)	(0.192)
	[0.070[***	[0.052]***	[0.010]***	[0.009]***
Large	1.255***	1.415***	1.222***	1.400***
	(0.0862)	(0.0725)	(0.0720)	(0.106)
	[0.283]***	[0.245]***	[0.080]***	[0.068]***
Ln(STRI)	−0.147*	−0.0955	−0.248**	−0.242*
	(0.0836)	(0.0962)	(0.115)	(0.132)
	[−0.028]*	[−0.014]	[−0.014]**	[−0.011]*
Constant	18.34	13.30	−107.5***	−65.12
	(18.80)	(22.56)	(41.68)	(44.83)
Year dummies	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420
Pseudo *R*-squared	0.1352	0.1730	0.1418	0.1603

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

ing the STRI and the AVE, control variables have the expected signs but are not always significant. For example, firm age is only significant for GVC3, suggesting that the longer the firm has been established, the more likely it can benefit from foreign capital as a form of GVC integration. Firm size is found to be positive and significant across the four definitions of GVC participation. For example, being a medium size firm increases the likelihood of the firm to be integrated into GVCS through two-way trade (GVC1) by 0.07%, compared to small firms. Large firms are 0.28% and 0.24% more likely than small firms to export and import (GVC1) and to trade and acquire international certification (GVC2), respectively. The marginal effects are small and continue to decrease as the definition of GVC integration is deeper. For example, larger firms are only 0.08% more likely than smaller firms to trade and attract foreign capital, and

TABLE 7 Impact of AVE on GVC using probit analysis

Variable	GVC1	GVC2	GVC3	GVC4
Ln(Age)	−2.676	−2.033	13.88**	8.335
	(2.477)	(2.986)	(5.460)	(5.886)
	[−0.512]	[−0.298]	[0.759]**	[0.370]
Medium	0.502***	0.586***	0.410**	0.583***
	(0.0890)	(0.127)	(0.160)	(0.196)
	[0.071]***	[0.053]***	[0.010]**	[0.009]***
Large	1.257***	1.418***	1.229***	1.411***
	(0.0860)	(0.0736)	(0.0759)	(0.112)
	[0.283]***	[0.245]***	[0.080]***	[0.068]***
Ln(AVE)	−0.122	−0.101	−0.227***	−0.246**
	(0.0867)	(0.0773)	(0.0860)	(0.0959)
	[−0.023]	[−0.015]	[−0.012]***	[−0.011]**
Constant	18.90	13.53	−107.5***	−65.59
	(18.75)	(22.64)	(41.44)	(44.68)
Year dummies	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420
Pseudo *R*-squared	0.1350	0.1732	0.1421	0.1614

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

0.06% more likely to be fully integrated in GVCS (GVC4) (tables 6 and 7).

Findings from the estimation using the STRI (table 6) suggest that the higher the restrictions, the less likely a firm takes part in a GVC across all definitions, except for GVC2 (two-way trade and foreign certification). Indeed, higher trade policy restrictions affect firms' likelihood to export and import, and to benefit from foreign capital as a deeper form of GVC integration (GVC3 and GVC4) but appear to be insignificant for trading firms seeking to acquire foreign certification. This is expected, given that the quality of infrastructure services and service inputs in manufacturing matters for the sector's attractiveness to FDI, while do not necessarily affect firms opting for international standards. As for the AVE of services (table 7), it is found to matter only for deeper forms of GVC inte-

gration that include FDI (GVC3 and GVC4), while its impact on trade and foreign certification is found to be insignificant. Finally, it is worth noting that the marginal effects of services trade restrictions (STRI) as well as their AVE are found to be extremely small
[270] across all forms of GVC integration. This may be due to the small number of Egyptian firms integrated in GVCS across all firm sizes and all forms of GVC participation.

Extensions

In this section, the analysis is extended in two ways. First, the categorical variable GVC *status* is used in a multinomial logit analysis to investigate the impact of services restrictions on the different modes of GVC participation. Results are depicted in tables 8 and 9. In line with previous findings, firm age is likely to increase the likelihood that a firm joins a GVC in the form of two-way trade and foreign ownership (GVC3). Surprisingly firm age is found to reduce the likelihood of GVC participation through two-way trade only (GVC1). A possible justification could be that firms with a successful international trade profile tend be acquired by foreign investors at a certain point and that older firms are less likely to be exporting only. Another possible explanation is that older firms operating only domestically may be unable to reach the productivity level required to compete internationally. In line with findings from the baseline specification, firm size is found to increase the likelihood of GVC integration for medium firms except for GVC mode 3. This reflects the difficulties medium-size enterprises encounter to attract foreign investment. Being a large firm, however, increases the likelihood of GVC integration across the four definitions. As for the main explanatory variable, the STRI (table 8), the coefficient has the expected sign and is significant for 3 levels of GVC integration (GVC1, GVC3, GVC4). As discussed previously, an increase in services policy restrictions does not appear to affect the decision of a firm to acquire foreign certification.

Similar conclusions can be drawn from the multinomial logit analysis, including the AVE as the main explanatory variable (table 9). The control variables produce the same results as in the case of

TABLE 8 Impact of STRI on GVC Using Multinomial Logit Analysis

Variable	GVC1	GVC2	GVC3	GVC4	
Ln(*Age*)	–	−15.01**	−6.823	81.28***	15.97
		(7.190)	(6.040)	(15.92)	(13.66)
Medium	–	0.698***	1.270***	0.349	1.727***
		(0.237)	(0.290)	(0.377)	(0.543)
Large	–	1.196***	2.710***	2.015***	3.876***
		(0.340)	(0.180)	(0.321)	(0.295)
Ln(STRI)	–	−0.483**	−0.152	−0.589**	−0.590*
		(0.202)	(0.162)	(0.280)	(0.322)
Constant	–	111.8**	48.04	−621.7***	−125.7
		(54.80)	(45.83)	(121.3)	(103.6)
Year dummies	–	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420	5,420

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

TABLE 9 Impact of AVE on GVC Using Multinomial Logit Analysis

Variable	GVC1	GVC2	GVC3	GVC4	
Ln(*Age*)	–	−15.18**	−6.871	81.11***	16.01
		(7.219)	(6.060)	(15.97)	(13.57)
Medium	–	0.703***	1.275***	0.355	1.751***
		(0.231)	(0.291)	(0.383)	(0.553)
Large	–	1.190***	2.715***	2.009***	3.901***
	–	(0.338)	(0.182)	(0.318)	(0.304)
Ln(AVE)		−0.284	−0.149	−0.343	−0.592**
		(0.274)	(0.145)	(0.386)	(0.234)
Constant	–	112.4**	48.32	−621.3***	−126.3
		(55.09)	(45.93)	(121.7)	(102.9)
Year dummies	–	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420	5,420

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

the STRI. Services policy restrictions measured by the AVE only matter for the deepest form of GVC integration (GVC4) includ-

TABLE 10 STRI and Size Interaction

Variable	GVC1	GVC2	GVC3	GVC4
Ln(*Age*)	−0.433	−0.213	0.606**	0.319
	(0.486)	(0.419)	(0.256)	(0.226)
Medium	0.151	0.133	0.0320	0.0349
	(0.117)	(0.109)	(0.0451)	(0.0357)
Large	0.535***	0.425***	0.176***	0.149***
	(0.156)	(0.0957)	(0.0299)	(0.0337)
Ln(STRI)	0.000727	0.00763	−0.00138	$2.57e^{-5}$
	(0.0107)	(0.00509)	(0.00317)	(0.00242)
Ln(STRI)*Medium	−0.0271	−0.0272	−0.00748	−0.00873
	(0.0347)	(0.0325)	(0.0145)	(0.0111)
Ln(STRI)*Large	−0.0817	−0.0580*	−0.0321***	−0.0270**
	(0.0505)	(0.0295)	(0.00883)	(0.00971)
Constant	3.320	1.596	−4.591**	−2.425
	(3.691)	(3.194)	(1.946)	(1.721)
Year dummies	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420
R-squared	0.119	0.124	0.041	0.038

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

[272]

ing exports, imports, foreign certification, and foreign ownership.

The second extension is to account for firm heterogeneity by introducing an interaction term including services restrictions and firm size. Table 10 shows the results for the extended regression including an interaction of the STRI with firm size. Similar to the results of the baseline regression, the coefficient of firm age is only positive and significant for GVC3 including two-way trade and foreign ownership. The coefficients of firm size are positive and strongly significant for large firms across all definitions of GVC participation, while there appears to be no significant relation between being a medium firm and being integrated in a GVC. This implies that firm size matters for all dimensions of GVC integration.

While the coefficients of the STRI are all insignificant, the interaction of the STRI with firm size produces interesting results. First,

TABLE 11 AVE and Size Interaction

Variable	GVC1	GVC2	GVC3	GVC4
Ln(*Age*)	−0.430	−0.204	0.607**	0.321
	(0.483)	(0.421)	(0.256)	(0.227)
Medium	0.160	0.137	0.0392	0.0380
	(0.0965)	(0.0898)	(0.0377)	(0.0292)
Large	0.466***	0.385***	0.157***	0.135***
	(0.134)	(0.0820)	(0.0250)	(0.0251)
Ln(AVE)	0.00284	0.00646	−0.000176	$7.38e^{-5}$
	(0.00838)	(0.00504)	(0.00257)	(0.00191)
Ln(AVE)*Medium	−0.0351	−0.0337	−0.0116	−0.0115
	(0.0328)	(0.0306)	(0.0143)	(0.0107)
Ln(AVE)*Large	−0.0696	−0.0529	−0.0305***	−0.0262**
	(0.0509)	(0.0292)	(0.00859)	(0.00821)
Constant	3.291	1.536	−4.608**	−2.439
	(3.673)	(3.210)	(1.948)	(1.729)
Year dummies	Yes	Yes	Yes	Yes
Observations	5,420	5,420	5,420	5,420
R-squared	0.119	0.125	0.041	0.039

NOTES Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Errors are clustered by sector.

the coefficients of the interaction term involving medium-size firms have the expected sign but are all insignificant. A possible explanation is that exporting firms and those engaged in deeper forms of GVCS are usually larger firms. Therefore, the coefficients of the interaction term involving large firms are negative and significant for 'deeper' GVC participation indicators involving international certification and/or foreign ownership. In line with the literature on heterogeneous firms, larger firms are more likely to trade and to increase their competitiveness by attracting FDI and by opting for international certification to integrate in vertical fragmentation along value chains. Therefore, the presence of restrictive services regulations that discriminate against services imports or foreign services suppliers hinders large firms from engaging further in GVCS.

Table 11 shows the results of the interaction of the AVE of ser-

vices with firm size. The explanatory variables show the same results as the previous regression. Again, firm size matters for GVC integration across all definitions. The coefficients of the AVE of services are insignificant across all definitions of GVC participation.

[274] As for the interaction term, services restrictions do not seem to matter for medium-size firms, as these are generally less integrated in the global market. The presence of high AVE of services matters for large firms only when foreign ownership is included in the definition of GVC participation (GVC3 and GVC4). The likelihood that a firm benefits from foreign capital as a more advanced form of GVC integration appears to depend on the firm's ability to overcome the costs of inputs, including those of upstream services. In the case of restrictive services policies, the probability of engaging in the global market is lower as the cost of services inputs is significant. The decision to enter the global market also requires a minimum productivity threshold. Therefore, smaller firms are excluded.

CONCLUSION

The objective of this paper is to assess the impact of restrictive services policies on the likelihood of Egyptian manufacturing firms to participate in GVCS. This paper adopts the novel approach introduced by Dovis and Zaki (2020) to measure GVC participation using several indicators involving two-way trade, foreign certification, and/or foreign ownership. To the author's knowledge, this paper is the first attempt to use this integral approach to understand the link between restrictive policies in services inputs and performance in manufacturing activities. This paper also contributes to the small yet growing literature on services policies and GVC participation.

The findings from the empirical estimation are interesting for three reasons. First, services restrictions (measured by the STRI or the AVE of services) matter for GVC integration. Second, these restrictions matter for higher levels of GVC integration, especially those involving foreign ownership. Third, services policies matter for large firms. In line with the literature on heterogeneous firms, inefficient and expensive services are a fixed cost affecting firms' decisions to enter the exports market, and to potentially integrate

deeper into GVCS by receiving foreign capital. To be able to take part in the growing trend of global fragmentation, a minimum productivity threshold is required. This excludes medium firms and less productive firms.

[275] These findings emphasize the importance of opening the services sector for foreign competition. For developing countries like Egypt, services liberalization may help overcome the absence or lack of variety in specific services and is likely to generate better price-quality combinations in these services. Efficient services are not only important as inputs in manufacturing, but also as the 'glue' that holds together international fragmentation and that allows for a smooth functioning of GVCS. For developing countries, efficient and high-quality services inputs increase firms' competitiveness and provide better connection within GVCS. Competitive services policies also attract FDI in the manufacturing sector. In the context of increasing servicification, manufacturing firms can also improve their competitiveness by offering differentiated bundles of goods and services.

Overall, Egypt's services trade policy (measured by the STRI) is considered more restrictive than other regional groups of developing and emerging economies. Except for telecommunications, services regulations in Egypt are generally more discriminatory against foreign providers than the MENA region. Considering recent global events, patterns in GVCS are changing, where investments are reshored or 'near-shored' to bring the production of manufacturing goods closer to consumer markets. This may be an opportunity for Egypt to attract foreign investments as a geographically closer market (to Europe, for example) with relatively abundant and cheap labor. However, this depends on the overall business environment, including trade policy, investment regulations, and the quality of infrastructure and services.

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Résumés

Le rôle de l'Algérie dans le Sahel africain : vers un nouveau paradigme sécuritaire

LOFTI SOUR

Cet article étudie le rôle de l'Algérie dans la région du Sahel. Traditionnellement, l'Algérie a toujours été un courtier clé pour la stabilité dans le Sahel africain, qui continue de faire face à des défis cruciaux et à des menaces importantes. En tant que puissance régionale, l'Algérie a des intérêts au Sahel en raison de la contiguïté géographique, de la profondeur stratégique et des liens historiques. Par conséquent, le regain d'intérêt de l'Algérie pour l'Afrique subsaharienne est en grande partie motivé par la montée du terrorisme régional et l'effondrement de l'État malien en 2012, suivi de l'intervention militaire française au Mali en 2013. Ainsi, l'Algérie insiste pour maintenir une approche autonome dans l'ingénierie de sa stratégie de sécurité dans la région. Dans le cadre de son approche sécuritaire, l'Algérie cherche à privilégier les mécanismes politiques et diplomatiques par rapport aux mécanismes militaires afin de gérer les risques dans un cadre alliant sécurisation et humanisation. Cet article se base sur la de théorie des rôles pour examiner l'Algérie en tant que puissance moyenne, une puissance qui transcende la logique basée sur les capacités matérielles et les ressources tangibles.

Mots clés : Algérie, sécurité, Sahel africain, Mali, contre-terrorisme
IJEMS 15 (1): 155–177

Situation de la pêche dans la bande de Gaza : tendances passées et défis

DOAA M. A. HUSSEIN, MARIA CLAUDIA LUCCHETTI, HOSSAM A. ZAQOOT, JERNEJA PENCA ET MOHAMMED A. HUSSEIN

Cet article décrit de manière exhaustive les tendances passées et la situation actuelle de la pêche dans la bande de Gaza, en s'appuyant sur l'examen de la littérature et sa propre collecte de données. Gaza est un territoire politiquement contesté qui n'a pas fait l'objet d'une analyse ciblée en vue d'élaborer des mesures pour une gestion plus efficace de la pêche. Afin d'y contribuer, l'article aborde d'abord les lacunes qui peuvent entraver une gestion efficace, puis met en évidence les défis futurs. La production totale de produits de la mer a augmenté de manière constante au

cours des 15 dernières années en raison de la croissance rapide de l'aquaculture parallèlement à une augmentation de la production halieutique (87%) de 1995 à 2020. La flotte de pêche de la bande de Gaza a augmenté de 269%, passant de 647 navires motorisés en 1995 à 1741 navires en 2020. Les filets maillants, les trémails, les palangres, les sennes coulissantes et les filets dérivants étaient les engins de pêche les plus utilisés par les navires motorisés, suivis des chalutiers. Malgré les efforts déployés par le biais de la législation nationale pour résoudre les problèmes de gestion de pêche, la faible application, la faible conformité et la pêche non réglementée restent un défi sérieux. Les acteurs de la pêche, y compris les bailleurs de fonds de l'aide au développement à Gaza, doivent tenir compte du contexte social et politique de ces pêcheries lors de l'élaboration de stratégies de gestion appropriées.

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Mots clés : pêche, aquaculture, Gaza, gestion des pêches, pêche de subsistance
IJEMS 15 (1): 179–216

Promouvoir l'accès des PME au financement : preuves du secteur manufacturier en Égypte

MONA AMER ET IRENE SELWANESS

Le secteur manufacturier et son segment de petites et moyennes entreprises (PME) sont considérés comme des moteurs de création d'emplois. En Égypte, ces deux secteurs ont vu leur part dans l'emploi total diminuer au cours des dernières décennies. Ce document examine les efforts récents du gouvernement égyptien pour promouvoir la croissance du secteur manufacturier et élargir l'accès du secteur au financement, en particulier pour les PME. En utilisant les données des enquêtes menées par la Banque mondiale auprès des entreprises en 2013, 2016 et 2020, cet article explore dans quelle mesure les PME du secteur manufacturier aient bénéficié de ces récents programmes de financement. Les résultats indiquent que l'accès insuffisant au financement reste une contrainte majeure pour les PME manufacturières. Les initiatives de financement n'étaient pas dirigées de manière appropriée vers les entreprises les plus limitées en matière de crédit. Ce travail propose des recommandations politiques fondées sur des données factuelles pour faciliter un financement bancaire et non bancaire plus efficace susceptible de renforcer leurs capacités de création d'emplois.

Mots clés : PME, accès au financement, secteur manufacturier, création d'emplois, services financiers bancaires et non bancaires, Égypte
IJEMS 15 (1): 217–244

Libéralisation des services et participation aux chaînes de valeur mondiales : l'exemple de l'Égypte [283]

NORA ABOUSHADY

Avec la « servicification » croissante du secteur manufacturier, des services efficaces et compétitifs sont essentiels à l'engagement des pays en développement dans la structure de production actuelle reposant sur des chaînes de valeur mondiale. L'objectif de ce document est donc d'évaluer l'impact de la politique restrictive du commerce des services sur la participation des entreprises manufacturières aux chaînes de valeur mondiales en combinant les données de l'indice de restriction du commerce des services de Jafari et Tarr (2017) avec les données recueillies au niveau des entreprises égyptiennes et rapportée dans les enquêtes menées par la Banque mondiale auprès des entreprises. Le document utilise une nouvelle approche à plusieurs niveaux introduite par Dovis et Zaki (2020) pour mesurer différents degrés de participation des entreprises aux chaînes de valeur mondiales qui vont au-delà du simple commerce bilatéral. Les résultats de l'exercice empirique suggèrent que les restrictions sur les services réduisent la probabilité de participation des entreprises manufacturières aux chaînes de valeur mondiales. Cet impact est plus prononcé pour les grandes entreprises et pour les formes plus complexes d'intégration de la chaîne de valeur mondiale impliquant le commerce, la certification internationale et la propriété étrangère.

Mots clés : secteur manufacturier, servicification, investissement direct étranger, indice de restrictivité du commerce
IJEMS 15 (1): 245–279

Povzetki

Vloga Alžirije v afriškem Sahelu: novi varnostni paradigmi naproti

LOFTI SOUR

Ta članek obravnava vlogo Alžirije v regiji Sahel. Alžirija je bila tradicionalno vedno ključni posrednik stabilnosti v afriškem Sahelu, ki se še naprej sooča s ključnimi izzivi in pomembnimi grožnjami. Kot regionalna sila ima Alžirija interese v Sahelu zaradi geografske povezanosti, strateške globine in zgodovinskih vezi. Posledično je obnovljeno zanimanje Alžirije za podsaharsko Afriko v veliki meri posledica rasti regionalnega terorizma in propada malijske države leta 2012, čemur je leta 2013 sledilo francosko vojaško posredovanje v Maliju. Zato Alžirija vztraja pri ohranjanju avtonomnega pristopa pri oblikovanju svoje varnostne strategije v regiji. Kot del svoje strategije Alžirija želi dati prednost političnim in diplomatskim mehanizmom pred mehanizmi, ki jih uporabljajo države članice., si Alžirija prizadeva dati prednost političnim in diplomatskim mehanizmom pred vojaškimi mehanizmi za obvladovanje tveganj znotraj okvira, ki združuje sekuritizacijo in humanizacijo. V tem prispevku je Alžirija s pomočjo teorije vlog obravnavana kot srednja sila, ki presega okvire logike, ki temelji na materialnih zmogljivostih in materialnih virih.

Ključne besede: Alžirija, varnost, afriški Sahel, Mali, boj proti terorizmu
IJEMS 15 (1): 155–177

Stanje ribištva v Gazi: pretekli trendi in izzivi

DOAA M. A. HUSSEIN, MARIA CLAUDIA LUCCHETTI, HOSSAM A. ZAQOOT, JERNEJA PENCA IN MOHAMMED A. HUSSEIN

Ta članek celovito prikazuje pretekle trende in sedanje stanje ribištva na območju Gaze, pri čemer se opira na pregled literature in lastno zbiranje podatkov. Gaza je politično sporno ozemlje, ki ni bil predmet ciljno usmerjene analize z namenom oblikovanja ukrepov za učinkovitejše upravljanje ribištva. Da bi k temu prispeval, članek najprej obravnava vrzeli,

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ki lahko ovirajo učinkovito upravljanje, nato pa izpostavi prihodnje izzive. Celotna proizvodnja morske hrane se je pravzaprav povečala v zadnjih 15 letih zaradi hitre rasti ribogojstva in povečanja ribiške proizvodnje (87 %) od leta 1995 do leta 2020. Ribiška flota na območju Gaze se je povečala za 269 %, s 647 motoriziranih plovil leta 1995 na 1741 plovil leta 2020. Zabodne mreže, trislojne mreže, parangali, mreže z zapornimi plavaricami in viseče mreže so bili ribiško orodje, ki so ga motorizirana plovila najpogosteje uporabljala, tem pa so sledila plovila z vlečnimi mrežami. Kljub prizadevanjem z nacionalno zakonodajo za reševanje težav pri upravljanju ribištva, šibka izvrševanje, nizka skladnost in nereguliran ribolov ostajajo resen izziv. Strani, zainteresirane za ribolov, vključno s financerji razvojne pomoči Gazi, morajo upoštevati družbene in politične razmere ribištva pri razvoju ustreznih strategij upravljanja.

Ključne besede: ribištvo, ribogojstvo, Gaza, upravljanje ribištva, samooskrbno ribištvo
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Spodbujanje dostopa MSP do sredstev: dokazi iz proizvodnega sektorja v Egiptu

MONA AMER IN IRENE SELWANESS

Za proizvodni sektor ter njegov segment malih in srednje velikih podjetij (MSP) velja, da za gonilno silo ustvarjanja delovnih mest. V Egiptu se je delež skupnega števila zaposlenih pri obeh sektorjih zmanjšal v zadnjih desetletjih. Ta dokument preučuje nedavna prizadevanja egiptovske vlade, da bi spodbudila rast proizvodnega sektorja in razširitev dostopa sektorja do financiranja, zlasti za MSP. Na podlagi podatkov iz anket Svetovne banke o podjetjih iz let 2013, 2016 in 2020, članek raziskuje kako verjetno je, da so imela MSP v proizvodnem sektorju koristi od teh nedavnih programov financiranja. Ugotovitve kažejo, da nezadosten dostop do financiranja ostaja velika omejitev za proizvodnjo MSP. Financiranja niso bila ustrezno usmerjena v podjetja z največjimi kreditnimi omejitvami. Prispevek predstavlja z dokazi podprta politična priporočila, ki naj bi omogočila bolj učinkovito bančno in nebančno financiranje, ki lahko spodbudi njihove zmogljivosti za ustvarjanje delovnih mest.

Ključne besede: MSP, dostop do sredstev, proizvodni sektor, ustvarjanje delovnih mest, bančne in nebančne finančne storitve, Egipt
IJEMS 15 (1): 217–244

Liberalizacija storitev in sodelovanje globalnih vrednostnih verig: dokazi iz Egipta

NORA ABOUSHADY

Z naraščajočim ostoritvenjem proizvodnega sektorja so učinkovite in konkurenčne storitve ključnega pomena za vključitev držav v razvoju v današnjo proizvodno strukturo, ki temelji na svetovni vrednosti verige. Cilj tega članka je zato oceniti vpliv trgovinske politike za omejevanje trgovine s storitvami na proizvodna podjetja, ki sodelujejo pri globalnih vrednostnih verigah s kombiniranjem podatkov pridobljenih iz Indeksa omejevanja trgovine s storitvami od Jafari in Tarr (2017) s podatki na ravni egiptovskih podjetij, ki jih je izvedla Svetovna banka v sklopu raziskave o podjetjih. Prispevek uporablja nov večstopenjski pristop, ki sta ga uvedla Dovis in Zaki (2020) za merjenje različnih stopenj udeležbe podjetij v globalnih vrednostnih verigah, ki presegajo preprosto dvostransko menjavo. Rezultati empirične raziskave kažejo, da omejitve storitve zmanjšujejo verjetnost sodelovanja proizvodnih podjetij v globalnih vrednostnih verigah. Ta vpliv je izrazitejši pri večjih podjetjih in pri bolj zapletenih oblikah integracije globalnih vrednostnih verig, ki vključuje trgovino, mednarodno certificiranje in tuje lastništvo.

Ključne besede: proizvodni sektor, ostoritvenje, neposredne tuje naložbe, trgovina s storitvami, indeks restriktivnosti
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ملخصات

دور الجزائر في منطقة الساحل الأفريقي: نحو نموذج أمني جديد
لوفتى صور

تبحث هذه الورقة في الدور الجزائري في منطقة الساحل. تقليديًا ،كانت الجزائر دائمًا وسيطًا رئيسيًا للاستقرار الساحل الإفريقي ، التي لا تزال تواجه تحديات حاسمة وتهديدات كبيرة. كقوة إقليمية ، للجزائر مصالح في في منطقة منطقة الساحل بسبب التواصل الجغرافي والعمق الاستراتيجي والروابط التاريخية. وبالتالي ، فإن اهتمام الجزائر المتجدد بأفريقيا جنوب الصحراء مدفوع إلى حد كبير بنمو الإرهاب الإقليمي ، وانهيار الدولة المالية في عام 2012 ، وتلاه التدخل العسكري الفرنسي في مالي في عام 2013. وعلى هذا النحو ، تصر الجزائر على الحفاظ على نهج مستقل في هندسة إستراتيجيتها الأمنية في المنطقة. وكجزء من نهجها الأمني ، تسعى الجزائر إلى إعطاء الأولوية للآليات السياسية والدبلوماسية على تلك الخاصة بالجيش من أجل إدارة المخاطر في إطار يجمع بين التوريق والأنسنة. تأخذ هذه الورقة عدسة نظرية الدور لفحص الجزائر كقوة وسطى ، واحدة تتجاوز المنطق القائم على القدرات المادية والموارد الملموسة.
الكلمات المفتاحية: الجزائر ، الأمن ، الساحل الأفريقي ، مالي ، مكافحة الإرهاب
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حالة الثروة السمكية في قطاع غزة: الاتجاهات والتحديات الماضية
دعاء محمد حسين ، ماريا كلوديا لوشيتي ، حسام زقوت ، جرنيجا بنكا ، ومحمد أ. حسين

يصور هذا البحث بشكل شامل الاتجاهات السابقة لمصايد الأسماك والوضع الحالي في قطاع غزة ، بالاعتماد على مراجعة الأدبيات وجمع البيانات الخاصة. غزة منطقة متنازع عليها سياسيًا ولم تخضع لتحليل مستهدف بهدف تشكيل تدابير لإدارة مصايد الأسماك بشكل أكثر فعالية. من أجل المساهمة في ذلك ، يناقش المقال أولاً الثغرات التي قد تعيق الإدارة الفعالة ثم يسلط الضوء على التحديات المستقبلية. نما إجمالي إنتاج المأكولات البحرية بشكل مطرد في الخمسة عشر عامًا الماضية بسبب النمو السريع للاسترزاع المائي إلى جانب زيادة إنتاج المصايد (87٪) من 1995 إلى 2020. زاد أسطول الصيد في قطاع غزة بنسبة 269 ٪ من 647 كانت السفن المزودة بمحركات في عام 1995 إلى 1741 سفينة في عام 2020. كانت الشباك الخيشومية ، وشباك الجر ، والخيوط الطويلة ، وشبكات الشباك الكيسية ، والشباك العائمة هي معدات الصيد الأكثر استخدامًا بواسطة السفن الآلية ، تليها سفن الصيد. على الرغم من الجهود المبذولة من خلال التشريعات الوطنية لمعالجة مشاكل إدارة مصايد الأسماك ، فإن ضعف الإنفاذ ، والامتثال المنخفض ، والصيد غير المنظم لا يزال يمثل تحديًا خطيرًا. يتعين على أصحاب المصلحة في مصايد الأسماك ، بما في ذلك ممولي المساعدات التنموية لغزة ، مراعاة السياق الاجتماعي والسياسي لهذه المصايد عند وضع استراتيجيات إدارة مناسبة.
الكلمات المفتاحية: مصايد الأسماك ، تربية الأحياء المائية ، غزة ، إدارة مصايد الأسماك ، مصايد الكفاف
IJEMS 15 (2): 179–216

تعزيز حصول الشركات الصغيرة والمتوسطة على التمويل: أدلة من قطاع التصنيع في مصر

منى عامر وإيرين سلوانس

من العوامل الدافعة لخلق فرص (SME) يعتبر قطاع الصناعات التحويلية وشريحة المؤسسات الصغيرة والمتوسطة العمل. في مصر ، شهد هذان القطاعان انخفاضًا في حصتهما في إجمالي التوظيف خلال العقود الماضية. تبحث هذه الورقة في الجهود الأخيرة التي تبذلها الحكومة المصرية لتعزيز نمو قطاع التصنيع وتوسيع وصول القطاع إلى التمويل خاصة للشركات الصغيرة والمتوسطة. باستخدام بيانات استبيانات البنك الدولي الخاصة بالمؤسسات من 2013 و 2016 و 2020 ، تستكشف الورقة مدى احتمالية استفادة الشركات الصغيرة والمتوسطة في قطاع التصنيع من برامج التمويل الأخيرة هذه. تشير النتائج إلى أن الوصول غير الكافي إلى التمويل لا يزال يشكل عائقا رئيسيا أمام تصنيع المشاريع الصغيرة والمتوسطة. لم تكن مبادرات التمويل موجهة بشكل مناسب نحو الشركات التي تعاني من قيود الائتمان. تقدم الورقة توصيات بشأن السياسات القائمة على الأدلة لتسهيل التمويل المصرفي وغير المصرفي .الأكثر فاعلية والذي يمكن أن يعزز قدرات توليد فرص العمل لديهم

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تحرير الخدمات والمشاركة في سلاسل القيمة العالمية: أدلة من مصر

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مع تزايد "تقديم الخدمات" لقطاع التصنيع ، تعد الخدمات الفعالة والتنافسية أساسية لمشاركة البلدان النامية في هيكل الإنتاج الحالي الذي يعتمد على سلاسل القيمة العالمية. الهدف من هذه الورقة ، بالتالي ، هو تقييم تأثير سياسة تجارة الخدمات المقيدة على مشاركة شركات التصنيع في سلاسل القيمة العالمية من خلال دمج البيانات من مؤشر تقييد تجارة الخدمات من جعفري وتار (2017) مع بيانات على مستوى الشركات المصرية من استطلاعات البنك الدولي للمؤسسات. تستخدم الورقة نهجًا جديدًا متعدد المستويات قدمه دوفيس وزكي (2020) لقياس درجات مختلفة من مشاركة الشركات في سلاسل القيمة العالمية التي تتجاوز التجارة البسيطة ثنائية الاتجاه. تشير نتائج التجربة التجريبية إلى أن قيود الخدمات تقلل من احتمالية مشاركة شركات التصنيع في سلاسل القيمة العالمية. يكون هذا التأثير أكثر وضوحًا بالنسبة للشركات الأكبر وللأشكال الأكثر تعقيدًا من تكامل سلسلة القيمة العالمية .التي تنطوي على التجارة والشهادات الدولية والملكية الأجنبية

الكلمات المفتاحية: قطاع التصنيع ، الخدمة ، الاستثمار الأجنبي المباشر ، مؤشر تقييد تجارة الخدمات

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Cohabitation and appreciation: a wetland on the margins of a city.
Škojanski zatok, Slovenia. Photo by Borut Mozetič, February 2022.

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