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Simulating the Economic Impact of Occupation-Imposed Sanctions Through Reduced Palestinian Labor in Israel on Macroeconomic Variables in Palestine: A Study Using the Computable General Equilibrium (CGE) Model

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Abstract

Objectives: This study aims to simulate the potential macroeconomic impacts of economic sanctions imposed by the occupation, specifically examining effects stemming from reduced Palestinian labor mobility to Israel.

Method: A computable general equilibrium (CGE) model was employed, combined with a descriptive-analytical approach integrating a literature review of economic growth theories and relevant empirical studies.

Results: The simulation of a 90% reduction in Palestinian workers in Israel, a plausible scenario in the aftermath of the Gaza war reveals significant adverse macroeconomic impacts. The results indicate that unemployment increases by 15.69%, real GDP contracts by 6.39%, and household consumption declines by 21.77%. Furthermore, imports decrease by 5.30%, the Consumer Price Index (CPI) rises by 3.71%, and total government revenue falls by 2.07%. These interconnected outcomes highlight the severe economic repercussions of restricting labor mobility under occupation, exposing systemic vulnerabilities in consumption patterns, trade dynamics, and fiscal stability.

Conclusions: The findings highlight the acute vulnerability of the Palestinian economy to external shocks, particularly occupation-driven labor market constraints. The study recommends reducing dependence on foreign labor markets and urges policymakers to develop mitigation strategies, including economic diversifying and enhancing domestic labor market capacity to absorb displaced workers.

Keywords: Computable General Equilibrium (CGE), Macroeconomic Variables.

محاكاة الأثر الاقتصادي لعقوبات الاحتلال من خلال تقليص العمالة الفلسطينية في إسرائيل على المتغيرات الاقتصادية الكلية في فلسطين: دراسة باستخدام نموذج التوازن العام القابل للحوسبة (CGE)

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ملخّص

الأهداف: يهدف هذا البحث الى محاكاة الآثار المحتملة للعقوبات الاقتصادية التي يفرضها الاحتلال، مع تركيز خاص على نتائج تقليص حركة العمالة الفلسطينية إلى إسرائيل.

المنهجية: تم استخدام نموذج التوازن الكلي العام القابل للحوسبة (CGE) ، مدعومًا بمنهج وصفي تحليلي يدمج مراجعة الأدبيات المتعلقة بنظريات النمو الاقتصادي والدراسات التجريبية ذات الصلة .

النتائج: أظهرت محاكاة تقليص عدد العمال الفلسطينيين في إسرائيل بنسبة 90%، وهو سيناريو محتمل بعد حرب غزة - عن آثار سلبية جسيمة على الاقتصاد الكلي. تشير النتائج الى ارتفاع معدل البطالة إلى 15.69%، وانكماش الناتج المحلي الإجمالي الحقيقي بنسبة 6.39%، وانخفاض استهلاك الأسر بنسبة 21.77%. علاوة على ذلك، تراجعت الواردات بنسبة 5.30%، وارتفع مؤشر أسعار المستهلك (CPI) بنسبة 3.71%، وانخفضت الإيرادات الحكومية الاجمالية بنسبة 2.07%. تُبرز هذه النتائج المترابطة التداعيات الاقتصادية الخطيرة للقيود المفروضة على حركة العمالة تحت الاحتلال، وتكشف عن هشاشة هيكلية في أنماط الاستهلاك، وديناميكيات التجارة، والاستقرار المالي.

الخلاصة: تُبرز النتائج هشاشة الاقتصاد الفلسطيني أمام الصدمات الخارجية، لا سيما تلك المرتبطة بقيود سوق العمل التي يفرضها الاحتلال. تُوصي الدراسة بتقليل الاعتماد على الاسواق الخارجية، وتدعو صانعي السياسات إلى تطوير استراتيجيات للتخفيف من آثار هذه الصدمات، بما في ذلك تنويع القطاعات الاقتصادية وتعزيز قدرة السوق العمل المحلي على استيعاب العمالة المُهجَّرة.

الكلمات الدالة: نموذج التوازن الكلي العام القابل للحوسبة (CGE)، المتغيرات الاقتصادية الكلية.

1. INTRODUCTION

In international relations, economic sanctions have emerged as a prominent instrument for influencing the behavior and policies of target nations. These measures, including travel bans, asset freezes, arms embargoes, and trade restrictions, are increasingly favored as alternatives to military intervention by governments addressing foreign policy challenges (Hufbauer et al., 1990). The study of sanctions and their effects has gained significant traction in academia, particularly within economics and international relations (Hendrickson & Haass, 1998).

The Palestinian context presents a unique case for examining the impact of economic sanctions, given the persistent occupation and its multifaceted constraints. A Computable General Equilibrium (CGE) model offers a robust framework for simulating and analyzing the potential effects of sanctions across sectors of the Palestinian economy. Widely utilized to assess the economic consequences of policy changes and external shocks, CGE models provide a comprehensive perspective on complex interrelationships within economies (Hufbauer et al., 2007).

This study specifically examines the impact of sanctions on labor markets, recognizing that employment shifts significantly influence economic growth. By analyzing workforce distribution across industries, the study elucidates how Israeli-imposed sanctions may affect Palestine's labor market, industrial output, and broader economy. "Workers in Israel" specifically refers to Palestinian individuals employed within Israel. This group constitutes a subset of labor mobility, encompassing those who possess permits and are authorized to cross into Israel for employment. These workers are subject to stringent controls, including permit systems, security screenings, and movement restrictions, with their employment closely regulated by Israeli authorities. Their ability to work in Israel is determined not only by economic opportunities but also by Israeli policies, which can change abruptly in response to political or security developments (Kav LaOved, 2018).

The application of CGE modeling enables the exploration of diverse scenarios and policy responses, equipping policymakers with insights into potential outcomes of sanction regimes and facilitating strategies to mitigate adverse effects (Hosoe, 2018). By simulating occupation-imposed sanctions on Palestine through a CGE framework, this study contributes substantively to the literature on sanctions, labor markets, and industrial dynamics in conflict-affected regions. It offers critical insights into the interplay between sanctions, employment, and economic structures, informing effective policy responses to ongoing challenges (Gharibnavaz & Waschik, 2018).

Palestine operates under a prolonged Israeli occupation characterized by arbitrary control systems restricting the flow of goods, raw materials, and people. Movement constraints and resource control in over 60% of occupied territories severely impede development (Mareček, 2024). Over seven decades, Palestine has faced extraordinary political, economic, and security challenges, resulting in profound economic and humanitarian fragility. Persistent occupation, resource scarcity, and inadequate infrastructure exacerbate vulnerabilities to recurrent financial crises.

Economic development in Palestine is further hindered by Israeli-imposed restrictions, including border control, production input limitations, import-export constraints, land confiscation, and exploitation of natural resources— notably Israeli control of approximately 80% of Palestinian water resources. The separation wall and destruction of economic infrastructure compound these challenges, inflating costs for imports, exports, and transportation, thereby undermining competitiveness and growth (World Bank, 2017).

Economic growth, defined as the relative change in GDP reflecting final goods and services production, remains a central quantitative indicator in development discourse. While critiques highlight its neglect of qualitative dimensions, the pursuit of growth remains a primary policy concern (Guerron-Quintana et al., 2023). Schumpeterian theory posits growth as driven by knowledge accumulation, innovation, production factor expansion, and privatization efficiency, particularly under

functional institutional conditions (Aghion, 2018).

Computable General Equilibrium (CGE) models are extensively employed to evaluate the impacts of policy changes and external shocks on economies. By capturing cross-sector interactions, these models reveal how sectoral changes influence broader economic systems. Higgs et al. (1988) demonstrated their utility through a hybrid methodology combining top-down and bottom-up approaches, addressing computational challenges while assessing policy impacts regionally. Such models remain indispensable for analyzing complex economic dynamics in conflict zones like Palestine (Lahcen et al., 2020).

In recent years, the Palestinian economy has experienced significant vulnerabilities and threats, primarily due to its enforced dependence on the Israeli economy. The ongoing actions and policies of the Israeli occupation government, along with the imposition of economic sanctions on the Palestinian Authority amid persistent political and security conflicts, have further exacerbated these challenges. The longstanding siege of the Palestinian economy is manifested in several critical ways. Most notably, the freezing and confiscation of clearance revenues owed to the Palestinian government have severely impaired the Authority's ability to pay public sector salaries. Millions of dollars have been deducted from these funds to compensate Israelis affected by Palestinian operations, and additional deductions have been made equivalent to the monthly allocations the Palestinian Authority provides to the families of prisoners and martyrs. Furthermore, Israel maintains control over all external crossings, thereby obstructing commercial activities, including import and export operations to and from Israel and through its ports.

Additional measures, such as the cancellation and withdrawal of VIP cards from Palestinian public figures, businesspeople, and merchants, have negatively impacted industrial and commercial activities, further impeding overall economic growth. The Israeli authorities also regulate the number of Palestinian workers permitted to enter Israel, directly influencing the unemployment rate and, consequently, Palestinian economic growth.

Given these conditions, the present study aims to simulate the potential economic shocks resulting from sanctions that reduce the number of Palestinian workers in Israel, thereby assessing their impact on key macroeconomic variables. The analysis employs the Computable General Equilibrium (CGE) model for Palestine, developed with technical assistance from the Economic and Social Commission for Western Asia (ESCWA). The outcomes of these shock simulations are intended to provide valuable insights for Palestinian policymakers and economic planners, enabling them to devise strategies to mitigate the adverse effects of such shocks. Furthermore, the results, grounded in objective data and rigorous analysis, can serve to highlight the practices of the Israeli occupation to the international community (Eltalla, 2017).

This study is structured to simulate and analyze the potential impacts of a reduction in the number of Palestinian workers on key macroeconomic variables, utilizing a Computable General Equilibrium (CGE) model tailored to the Palestinian context. The CGE model serves as a comprehensive analytical tool to assess the economy-wide ramifications of policy changes, with particular emphasis on the effects of economic sanctions and occupation-related restrictions. Specifically, the study investigates how these constraints influence labor mobility, trade flows, and overall economic performance in Palestine.

The central problem addressed by this study is the need to systematically understand and quantify the economic consequences of reduced labor mobility, thereby informing evidence-based policy-making and contributing to the enhancement of economic resilience in Palestine. By providing an in-depth and integrative analysis of the repercussions of diminished labor mobility, this study aims to deliver valuable insights for policymakers and stakeholders seeking to mitigate the adverse effects of external shocks and to foster sustainable economic development in Palestine (World Bank, 2017).

2. THEORETICAL BACKGROUND

General Equilibrium (GE) modeling is fundamentally rooted in marginal utility theory, with seminal contributions from Gossen (1854) and Walras (1874). GE theory provides a comprehensive framework for explaining exchange economies by capturing the interactions between supply and demand across all markets, ultimately leading to a state of general equilibrium. In a GE model, the interrelationships among various markets and sectors of the economy are explicitly considered, offering a holistic perspective on economic dynamics (Ekpeyong, 2024). This approach stands in contrast to partial equilibrium modeling, which focuses on isolated markets rather than the economy as a whole.

The evolution of GE theory led to the incorporation of production within a static framework, resulting in the development of static Computable General Equilibrium (CGE) models. These models are regarded as an extension of the input-output methodology pioneered by Leontief (1986) and are extensively utilized to analyze the impacts of economic shocks that affect multiple markets simultaneously (Wing, 2004). Unlike dynamic CGE models, which are designed to capture short-term economic fluctuations and immediate impacts, static CGE models focus on long-term economic cycles and the effects of policy changes. Theoretically, CGE models simulate economic systems by integrating the general equilibrium structure with real-world economic data, thereby numerically determining the supply, demand, and price levels that achieve equilibrium across a specified set of markets. This comprehensive framework is essential for understanding the complex interactions within an economy and is widely employed by researchers and policymakers (Wing, 2004).

A CGE model represents an economy using a system of equations grounded in economic theory. It typically includes equations that describe the behavior of consumers, producers, and the government, as well as market-clearing conditions for goods and factors of production. The model employs data from a social accounting matrix (SAM) to ensure that all economic activities are balanced, accurately reflecting the circular flow of income and expenditure within an economy (Eltalla, 2017).

The theoretical framework for analyzing the impact of occupation-imposed economic sanctions on Palestinian industries and labor markets through a CGE model is grounded in the Economic Sanctions Theory, as developed by Hufbauer et al. (2007). This theory posits that sanctions are intended to influence a target country's behavior by exerting economic pressure through disruptions to trade, investment, and financial flows. Labor market dynamics can be further examined using frameworks such as the insider-outsider model (Lindbeck & Snower, 1988) and the search and matching model (Pissarides, 2000), which elucidate how sanctions may impact employment levels, wage structures, and overall labor market conditions across various industries.

The political economy perspective on sanctions, as articulated by Kaempfer and Lowenberg (1988), provides insights into the political motivations driving sanction policies and their potential economic ramifications, considering the interplay between political decisions and economic outcomes. Theories of economic development in conflict-affected regions, such as those outlined by Collier (2003), offer crucial context for understanding the unique challenges faced by the Palestinian economy under occupation and sanctions. Collectively, these theoretical perspectives provide a robust foundation for analyzing the complex effects of sanctions within conflict-affected economies (Collier, 2003; Hufbauer et al., 2007; Lindbeck & Snower, 1988; Pissarides, 2000).

By integrating these theoretical components into a CGE model, researchers can simulate various sanction scenarios and assess their impacts on different sectors of the Palestinian economy. This approach enables a nuanced examination of both the direct and indirect effects of sanctions, with particular emphasis on labor markets and industrial sectors. Additionally, it facilitates the exploration of potential policy responses to mitigate negative impacts, thereby offering valuable insights for policymakers and stakeholders (Eltalla, 2017).

In summary, the CGE model stands as a valuable analytical tool for economic analysis, providing insights into the potential effects of policy changes and external shocks on an economy. It is particularly useful for economies such as Palestine, where understanding the intricate interactions among different economic agents is crucial for effective policy-making. The CGE model enables comprehensive analysis by capturing the interactions between sectors and agents, including households, enterprises, and the government, allowing for a detailed understanding of how changes in one part of the economy affect the rest.

By simulating the effects of various policy interventions, such as adjustments in government expenditure, taxation, or trade policies, CGE models help policymakers evaluate potential outcomes before implementation, thereby reducing the risk of unintended consequences. Moreover, these models can be adapted to specific economic contexts, such as the Palestinian economy, allowing for tailored analyses that consider unique economic structures and challenges.

3. LITERATURE REVIEW

3.1 Empirical Literature Review

Recent studies employing the Computable General Equilibrium (CGE) model have increasingly concentrated on assessing the potential repercussions of economic sanctions and restrictions on the Palestinian economy within the context of ongoing conflict and occupation. For instance, a study utilizing a CGE model indicates that the continuation of current Israeli restrictions is likely to exacerbate economic and social vulnerabilities in Palestine, leading to declining growth and living standards.

Projections suggest a negative trajectory for real per capita income in the West Bank by 2025, with only minimal growth anticipated in Gaza. Conversely, the removal of Israeli restrictions in Area C could substantially enhance economic growth in the West Bank, potentially increasing it by 33% by 2025. Similarly, lifting the blockade on Gaza could result in a 32% rise in cumulative growth, thereby fostering trade and enabling the reconstruction of essential infrastructure. These findings mention the value of CGE models in analyzing the impacts of trade barriers and labor mobility in conflict-affected regions such as Palestine, as they provide comprehensive insights into the economy-wide effects of policy changes and facilitate a deeper understanding of various labor market conditions (World Bank, 2017).

Beyond the Palestinian context, CGE models have been widely applied to evaluate the impacts of diverse economic policies and shocks in other regions. Lahcen et al. (2020) assessed the effects of green recovery policies on economic performance and greenhouse gas emissions, demonstrating that government investment in eco-friendly projects can stimulate economic growth while reducing energy consumption and emissions. Khodzhaian et al. (2021) modeled the impact of structural shifts on Ukraine's economic dynamics using the GTAP CGE model, quantifying industry-specific changes resulting from structural policies. Furthermore, Gharibnavaz and Waschik (2018) employed a CGE model to simulate the effects of international sanctions on Iran’s economy, finding that sanctions led to significant welfare losses and reduced GDP growth. Hosoe (2018) used a CGE model to analyze the economic consequences of Brexit, including the effects of trade barriers, thereby illustrating the model’s capacity to evaluate complex policy shocks such as economic sanctions. Collectively, these studies highlight the versatility and efficacy of CGE models in capturing both the direct and indirect effects of policy changes by modeling interactions between sectors, agents, and markets and by grounding the analysis in economic theory and empirical data (Gharibnavaz & Waschik, 2018; Hosoe, 2018; Khodzhaian et al., 2021; Lahcen et al., 2020).

Overall, the empirical literature demonstrates that CGE models are indispensable tools for analyzing the potential impacts of economic sanctions, policy reforms, and external shocks on economic growth, regional development, labor markets, and

environmental sustainability. Their studies provide policymakers with evidence-based insights, enabling the design of more effective strategies to foster sustainable economic development and resilience in conflict-affected and vulnerable economies.

3.2 Economic dependence and the link between the Palestinian economy and the Israeli economy

Since the onset of the Israeli occupation of Palestinian territories in 1967, the occupying authorities have systematically and deliberately integrated the Palestinian economy with that of Israel, fostering deep dependency and increasing vulnerability. The Palestinian economy has been primarily oriented toward serving the needs of the Israeli economy in various respects, a process facilitated by Israel's comprehensive control over border crossings, ports, and all import and export operations. Additionally, the destruction of critical infrastructure has posed significant barriers to the development of an autonomous and resilient Palestinian economy (World Bank, 2017).

Following the signing of the Oslo Accords in 1993 and the Paris Economic Protocol of 1994, which defined and regulated economic relations between the Palestinian and Israeli economies, the Palestinian National Authority sought to establish trade relations with Arab countries and other nations worldwide. These efforts aimed to diversify and expand the Palestinian foreign trade base, increase anticipated gains, and break Israel's monopoly over the Palestinian foreign trade sector.

In pursuit of economic independence, the Palestinian Authority has signed trade agreements with various Arab and international partners. However, these agreements have not significantly altered the structure of economic relations with either the global community or Israel. Israel continues to exercise control over all Palestinian crossings and borders with neighboring countries, thereby regulating the flow of imports, exports, goods, and raw materials. The financial arrangements established by the Paris Economic Protocol have enabled Israeli authorities to control the Palestinian Authority's financial resources, particularly in the collection and management of tax revenues. Moreover, Israel maintains oversight of Palestinian workers employed within its borders (Arnon, 2021).

This economic relationship has profound implications for both economies. Palestinian workers are integral to certain sectors in Israel, particularly construction, where they comprise approximately one-third of the workforce. However, the suspension of work permits following the events of October 7 has led to widespread unemployment among these workers, exacerbating economic challenges within the Palestinian territories. The current situation highlights the complex economic interdependence between Israel and Palestine, as well as the acute vulnerability of the Palestinian economy to external shocks and policy changes (PCBS, 2023).

Economic sanctions have a significant impact on the Palestinian economy, primarily due to the restrictions imposed by Israel. These sanctions and restrictions affect various aspects of economic life in Palestine. For instance, the Israeli closure policy includes roadblocks, curfews, and checkpoints, which severely restrict the movement of goods, services, and people between Palestinian regions and Israel. As a result, Palestinian employment in Israel has declined, leading to increased unemployment and poverty in the Palestinian territories (Agbahey et al., 2018).

The Israeli labor market plays a crucial role in the Palestinian economy by providing employment opportunities to a significant number of Palestinian workers, particularly from the West Bank. As of the end of 2022, approximately 192,800 Palestinians were employed in Israel, representing about 18.9% of the total Palestinian workforce (PCBS, 2023). Employment opportunities in Israel help alleviate some of the economic pressures faced by Palestinians, as working in Israel typically provides higher wages compared to local Palestinian jobs, thereby improving living standards for many families. However, this dependency also grants Israel substantial leverage; any restrictions or changes in policy regarding Palestinian workers can lead to increased unemployment and economic instability within the Palestinian territories. For example, if Israel were to restrict the entry of Palestinian workers, it would likely result in higher unemployment rates and increased

poverty, placing additional financial strain on the Palestinian government to provide for basic needs and social services (PCBS, 2023).

Table 1: The percentage of Palestinian workers in Israel and settlements from 2015 -2022

Region	2015	2016	2017	2018	2019	2020	2021	2022
Israel & Settlements in West Bank	16.4	16.9	18.4	18.2	17.8	17.1	18.8	22.5
Israel & Settlements in the Gaza Strip	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8
Israel & Settlements in Palestine	11.5	11.8	13.0	13.3	13.2	13.1	14.1	18.3

Source: PCBS. (2023). Number and percentage of employed persons aged 15 years and above working in Israel and Settlements from Palestine by possession of the work permit, 2015–2022. Ramallah: PCBS.

Table 2: The Number of Palestinian workers in Israel and settlements from 2010 -2023

Year	Region	
	Gaza strip	**West Bank**
2010	-	76,700
2011	-	81,400
2012	-	80,400
2013	-	95,600
2014	-	102,900
2015	-	106,700
2016	-	110,700
2017	-	120,702
2018	-	127,200
2019	-	133,300
2020	100	124,900
2021	200	145,200
2022	2,400	190,400
2023	4,500	127,800

(-): It means that no worker from the Gaza Strip was able to work in Israel and the settlements.

Source: Palestinian Central Bureau of Statistics, 2024. Labor Force Database, 2010-2023. Ramallah - Palestine.

Figure (1): Number of Workers from the West Bank and Gaza Strip in Israel and Settlements

Source: Palestinian Central Bureau of Statistics, 2024. Labor Force Database, 2010-2023. Ramallah - Palestine.

The graph above illustrates a steady increase in the number of workers from the West Bank employed in Israel and settlements, reaching a peak in 2022 before declining in 2023. In contrast, the Gaza Strip shows a noticeable rise in the number of workers beginning in 2020, with significant increases observed in both 2022 and 2023. This data highlights a clear trend in Palestinian employment in Israel and settlements from 2015 to 2022.

For the West Bank, the proportion of Palestinians working in Israel and settlements increased steadily from 16.4% in 2015 to 22.5% in 2022, representing a substantial 37% growth over eight years. This trend shows the growing economic dependence on Israeli employment opportunities. In the Gaza Strip, there was no recorded employment in Israel until 2020. However, a modest but notable shift occurred in 2021 (0.1%) and 2022 (0.8%), suggesting a slight easing of restrictions on Gaza workers. Overall, the percentage of Palestinians from both regions working in Israel and settlements rose from 11.5% in 2015 to 18.3% in 2022. This trend highlights the increasing importance of Israeli employment for the Palestinian economy. The growing reliance on employment in Israel and settlements may reflect limited job creation within the Palestinian territories, the higher wages available in Israel compared to local opportunities, and the potential vulnerability of the Palestinian economy to fluctuations in the Israeli labor market. The most significant increases occurred in 2021 and 2022, potentially reflecting post-COVID-19 economic recovery and changes in Israeli labor policies. This data mentions the complex economic relationship between Israel and the Palestinian territories, highlighting both opportunities and challenges for Palestinian workers and policymakers.

Palestinian workers in Israel face several significant challenges. The Palestinian economy is heavily dependent on the Israeli labor market, making it vulnerable to political and economic fluctuations. This dependency enables Israel to exert economic pressure by controlling the number of work permits issued to Palestinian workers. Any reduction in these permits can lead to increased unemployment and economic instability within the Palestinian territories. Palestinian workers must obtain permits to work in Israel, which are subject to strict regulations and can be revoked at any time. This system creates

uncertainty and insecurity, as workers' employment status depends on the prevailing political climate and Israeli policies.

Additionally, the Israeli government can impose economic sanctions that affect Palestinian workers, such as freezing and confiscating Palestinian revenues, which undermines overall economic stability and job security. Palestinian workers in Israel often face limited labor rights and protections compared to their Israeli counterparts, including lower wages, fewer benefits, and inadequate workplace safety measures. Political tensions and conflicts can result in abrupt policy changes, leading to sudden job losses and exacerbating economic hardships in Palestinian communities. These challenges mention the precarious nature of employment for Palestinian workers in Israel and highlight broader economic and political issues affecting the Palestinian territories.

4. DATA AND METHODOLOGY

The methodology of this study is structured to ensure analytical rigor and policy relevance. It begins with a comprehensive literature review to establish a theoretical and contextual foundation. Subsequently, a quantitative approach employs a Computable General Equilibrium (CGE) model, recognized for capturing economy-wide interlinkages and simulating impacts of policy changes or external shocks.

The CGE model is grounded in microeconomic foundations of rational optimization: households maximize utility and producers maximize profits under respective constraints. Data from the Palestinian Central Bureau of Statistics (PCBS), ensures the analysis reflects Palestinians current economic structure. Technical support from the Economic and Social Commission for Western Asia (ESCWA), enhances the model robustness.

Scenario analysis simulates policy shocks, specifically reductions in Palestinian workers in Israel, and their effects on Palestine's macroeconomic variables. The CGE model assesses direct and indirect impacts through sectoral price linkages, providing a replicable basis for evaluating labor market shocks.

In the implementation phase, the researcher undertook a series of technical steps to ensure that the CGE model was both contextually relevant and methodologically robust. The CGE program was used to accurately reflect the unique structure of the Palestinian economy. This process involved the careful parameterization of production functions, household consumption patterns, labor market segmentation, and trade linkages, ensuring that the model captures the specific economic realities and institutional features of Palestine.

The researcher selected scenarios within the CGE software, explicitly modeling the reduction in Palestinian labor mobility to Israel as an exogenous shock to the labor market. This required the specification and calibration of labor supply constraints, wage adjustment mechanisms, and the resulting feedback effects on household incomes, sectoral outputs, and overall macroeconomic indicators. Additionally, the validated of the model by comparing baseline simulation outputs with historical macroeconomic data, thereby ensuring the model's predictive accuracy and reliability. Throughout the process, technical guidance from ESCWA was utilized to refine the model structure and to implement best practices in scenario analysis and economic modeling.

5. CONCLUSION

5.1 The Shock of Palestine CGE Model

Policy Shock Scenario: Implement the 90% reduction of Palestinian workers in Israel within the model.

Simulation: Run the model to generate projections for the key macroeconomic variables under the shock scenario.

The closure rule: is granted, choosing the policy is "workers in Israel in all sectors" from 2023- 2026.

Table 3: The change of some variables from 2023 - 2026

	2023	2024	2025	2026
Real GDP	-6.04	-6.24	-6.52	-6.76
Total Imports	-5.12	-5.17	-5.37	-5.52
Total Investment	-17.05	-16.51	-16.43	-16.0
Unemployment Rate (in percent)	15.44	15.69	15.95	16.10

Source: Palestine CGE Model

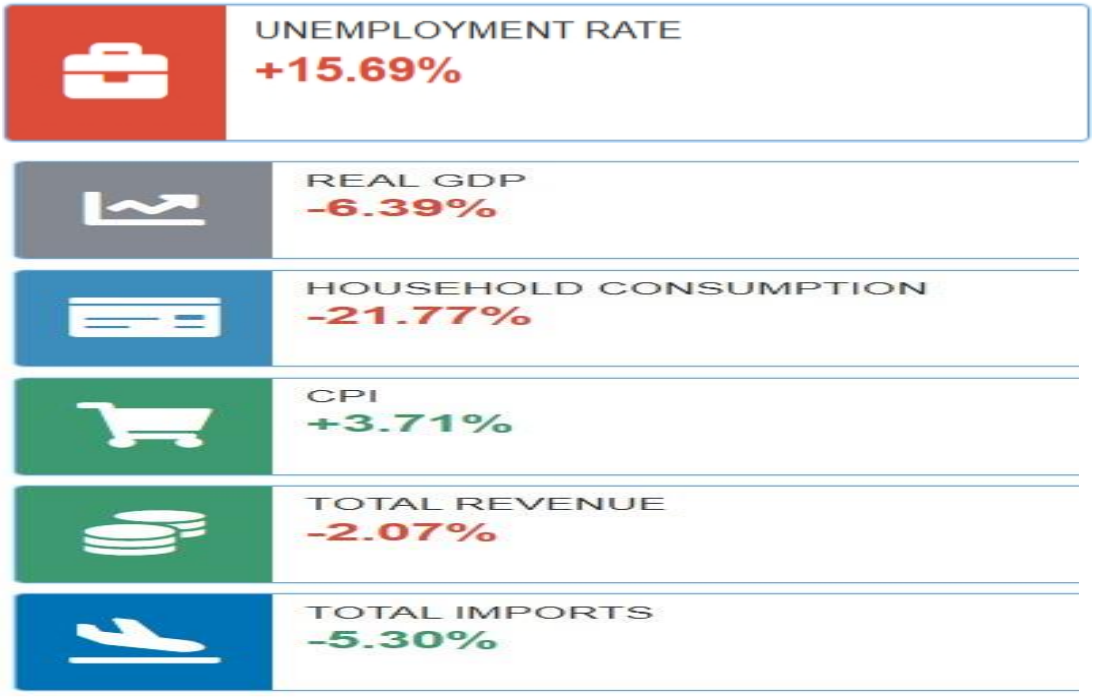

Figure (2): The results from the Palestine CGE Model when it has a shock by decreasing the number of workers in Israel by 90% from 2023 - 2026

Source: Palestine CGE Model

Table 3 presents detailed numerical data for each year, while Figure 2 illustrates these trends as an average over four years, facilitating a clearer visualization of economic deterioration and rising unemployment resulting from the modeled shock. According to Figure 2, the results from the CGE model, which simulates a 90% reduction in the number of Palestinian workers in Israel from 2023 to 2026, indicate a significant increase in unemployment, reaching 15.69%. Economic sanctions, compounded by ongoing conflict, have profoundly impacted the living standards of Palestinians, causing dramatic increases in both poverty and unemployment rates. This decline reflects not only reduced domestic demand but also diminished access to Israeli markets. The combined effects of conflict and sanctions have inflicted extensive damage on infrastructure, including homes, hospitals, schools, and essential services such as water and sanitation systems, which, in turn, place greater pressure on social and health services, increase government expenditure, and strain the general budget.

The return of workers to Palestine, resulting from reduced labor mobility, exacerbates local unemployment rates, leading to declines in productivity and consumption, and consequently, negatively affecting economic growth. Lower household incomes, particularly among families previously reliant on employment in Israel, contribute to a reduction in domestic demand for goods and services. This economic instability may further deter both domestic and foreign investment. Collectively, these factors are projected to cause a significant contraction in Palestinian real GDP by 6.39%. This is accompanied by an average decline in household consumption of 21.77%, thereby reducing the consumption of goods and services and diminishing overall welfare.

A reduction in Palestinian labor flows to Israel, whether due to conflict or policy changes, has clear negative implications for the Palestinian economy and welfare. The findings highlight that reduced employment opportunities in Israel not only result in income loss but also impede Palestinian economic growth. The simulation results offer critical policy insights, suggesting that liberalizing labor mobility, particularly through temporary worker movement, yields mutual benefits by helping to avoid social and political costs in host countries and preventing a permanent drain of human resources from sending countries.

The Palestinian National Authority (PNA) might consider pursuing bilateral labor agreements with neighboring countries to better manage labor movements and minimize uncertainty and volatility. Given the limited development options available in Palestine, enhancing Palestinian employment could serve as a means to improve household welfare. Further studies are warranted to explore the potential impacts of taxation schemes on the economy and labor market dynamics. Where such schemes are infeasible, policymakers should consider alternative monetary or fiscal measures to counteract these adverse effects, with due regard to the unique characteristics of their economies and labor markets.

Overall, economic sanctions and ongoing conflict have compounded vulnerabilities in the Palestinian territories, leading to deteriorating living standards, increased poverty, and heightened social and economic fragility.

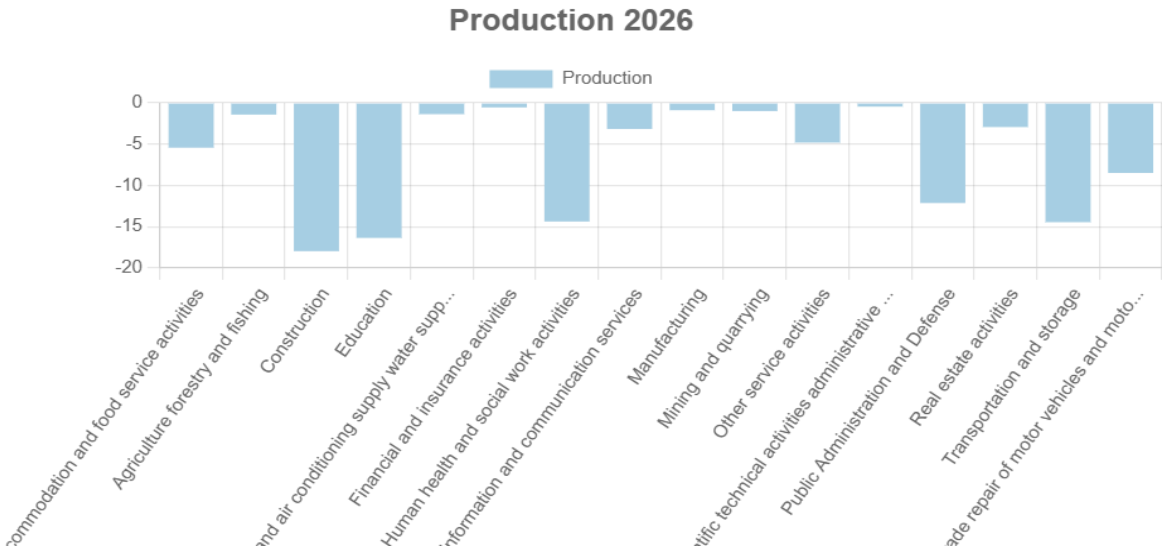

Figure (3): The results of the sectors from the Palestine CGE Model when shocked by decreasing the number of workers in Israel by 90% from 2023 - 2026

As illustrated in Figure 3, all economic sectors experience negative impacts, albeit to varying degrees. The findings reveal a significant reallocation of labor, such as from the agricultural and manufacturing sectors to the construction sector, which emerges as the most severely affected by the simulated shock. This outcome is primarily because the majority of Palestinians employed in Israel work in construction; consequently, this sector bears the greatest burden from the reduction in labor mobility. By incorporating a labor mobility function into the model, the simulation distributes the adverse effects more evenly across sectors, thereby mitigating an unsustainable increase in wages within the construction sector. This modeling approach offers a more realistic representation of sectoral dynamics under such shocks, reflecting the interconnectedness of labor markets within the Palestinian economy.

Empirical analysis demonstrates the acute structural vulnerability of the Palestinian economy to external shocks, with occupation-imposed labor market restrictions emerging as a particularly critical constraint. Simulation results indicate that a 90% reduction in workers' flows would trigger a sustained contraction in GDP (averaging -6.39% from 2023 to 2026), a severe decline in household consumption (-21.77%), and a surge in unemployment to 15.69%. These findings mentioned the economy's destabilizing reliance on external employment, highlighting the urgent need for targeted policy interventions.

In response, three imperative policy directions are proposed. In the short term, it is essential to negotiate protected bilateral labor agreements to safeguard vital income streams and to implement targeted cash transfer programs for displaced workers. Over the medium term, strategic sectoral diversification, particularly in ICT, renewable energy, and technological innovation, should be pursued, accompanied by comprehensive vocational retraining aligned with emerging domestic sectors. For the long term, establishing labor market observatories to monitor real-time employment shocks and developing contingency fiscal mechanisms for rapid economic stabilization are crucial steps toward enhancing institutional resilience and economic sustainability.

6. RECOMMENDATIONS

The results of this study highlight the profound vulnerabilities and economic dependencies that characterize the Palestinian economy, particularly in light of the severe contraction in GDP, unprecedented unemployment rates, and the catastrophic decline of key sectors. While reopening the Israeli labor market to Palestinian workers may provide immediate relief for household incomes, it simultaneously entrenches structural dependency and heightens vulnerability to external shocks. In response to these findings, the following policy recommendations are proposed to mitigate the adverse impacts of economic sanctions and ongoing conflict:

- Reduce dependency on the Israeli economy by actively diversifying trade relations and expanding economic partnerships with regional and international actors. Such diversification can help buffer the Palestinian economy against the effects of Israeli sanctions on revenues and employment.
- Enhance domestic economic resilience through targeted policies that support the development of local industries and encourage investment in sectors capable of generating employment independently of Israeli influence. This includes fostering entrepreneurship and supporting small and medium-sized enterprises (SMEs).
- The Palestinian Authority should seek to increase support from international donors and organizations, not only for financial assistance but also to exert diplomatic pressure on Israel to comply with existing economic agreements, such as the Paris Protocol. International advocacy can play a critical role in safeguarding Palestinian economic interests and ensuring the flow of essential revenues, particularly the remittance of clearance revenues, which constitute the largest share of the Palestinian Authority's income. Moreover, increasing international aid and foreign direct investment can

help mitigate the negative impacts of reduced labor flows to Israel.

- Improve labor market conditions within the Palestinian territories to reduce reliance on employment in Israel. Investments in education, vocational training, and skills development are necessary to prepare the workforce for emerging sectors and foster sustainable job creation within the local economy.
- The study shows that restrictions on Palestinian workers in Israel lead to severe GDP decline (–6.76% by 2026) and rising unemployment (16.1%). The Palestinian government should prioritize economic diversification and domestic job creation by investing in resilient sectors such as technology, innovation, digital transformation, agriculture, and using technology in manufacturing to reduce dependence on external labor markets and enhance self-sufficiency. A more diversified economy would address sectoral imbalances and be less affected by sudden labor market closures, and then strengthen long-term economic stability.
- Implement targeted fiscal stimulus to offset declining household consumption (notably a decrease of 21.77%), such as direct cash transfers to low-income households and tax incentives for domestic investment in infrastructure and SMEs.
- Explore alternative employment strategies, for example, domestic job creation and sectoral diversification, to reduce reliance on Israeli labor markets.
- These recommendations are designed to enhance the comprehensiveness and policy relevance of the study, offering practical pathways for building a more resilient Palestinian economy. By reducing dependency on Israeli policies and fostering sustainable, inclusive growth, Palestine can better withstand external shocks and advance toward greater economic sovereignty and stability.

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