EXPORTING LABOR OR GOODS? LONG-TERM IMPLICATIONS FOR THE PALESTINIAN ECONOMY

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Abstract

The restricted access of the Israeli labor market to Palestinian workers is a major negative shock for the Palestinian economy, and naturally raises the questions of whether an alternative strategy to exporting labor is feasible and presents at least similar growth opportunities. In this paper, we develop a dynamic general equilibrium model to assess the impact of restricted access to the Israeli labor market on the Palestinian export performance, and in turn, on GDP growth. The results suggest first that exporting large flows of Palestinian workers in Israel tends to reduce the capacity of the Palestinian industry to export goods. Second, that – even under optimistic assumptions on the export-led growth potential of the Palestinian economy – the induced depreciation of the real exchange rate after the closure will not have sufficient growth effects to avoid large per capita income losses. Third, that the adoption of appropriate trade and fiscal policies in this context could significantly magnify the potential growth impact of a real exchange rate depreciation. Fourth, that external assistance is likely to have then a larger developmental impact, than in the case of a re-opening of the Israeli labor market to Palestinian workers.

I. Introduction

Since 1967, exports of labor from the West Bank and Gaza (WBG) have traditionally been more important than exports of goods (Kleiman, 1999). In September 2000, 21 percent of Palestinian employees were working in Israel, mainly in low-skilled jobs in the construction and agricultural sectors, and net factor incomes from abroad amounted to 22 percent of GDP—against 18 percent of GDP for the exports of goods.[1] This was making WBG, at that time, one of the most dependent economies in the world on workers remittances, and it contributed to finance a large trade deficit.

The current political situation, in which the number of Palestinians who are allowed or able to reach their jobs in Israel has plummeted, and in which the word "separation" appears more and more frequently, raises serious questions about whether exporting labor to Israel will be an option in the future. In addition, the prospects for boosting export of labor to other countries, e.g. the Gulf States, which have traditionally absorbed a significant number of Palestinian workers, remain limited. This naturally raises two related questions of whether an alternative strategy to exporting labor is feasible and presents at least similar growth opportunities to the Palestinian economy, and whether the Palestinian experience of exporting labor has been the most conducive to growth.

The relative easy access for Palestinian workers to comparatively well-paid jobs in Israel, and the associated large inflow of remittances, has undoubtedly led to an appreciation of the real exchange rate in WBG.[2] The possibility to commute to Israel has increased the reservation wage in WBG, below which workers prefer to increase their efforts to obtain a job in Israel rather than working in WBG, and may have pulled wages beyond the underlying growth in productivity. This has in turn gradually eroded the competitiveness of tradable activities and consequently, non-tradable sectors have expanded at the expense of sectors competing in world markets. These consequences are reminiscent of the so-called Dutch disease, suffered by many countries following a resource boom.

The negative impact could have been attenuated by larger productive investments and technological transfers in WBG, which would have had the effect of increasing the domestic productivity of labor, an in turn wages. However, this model of economic integration, notably promoted by the Oslo agreements,

failed[3]. In particular, productive investment in WBG remained very low,[4] thereby leading to a divergence in labor productivity compared to Israel.

It is most likely that the over-valuation of the real exchange rate has seriously limited growth opportunities in WBG. First, because concentrating productive factors in non-competing activities has reduced the necessity of innovation, and in turn productivity growth (cf. Shafik, 1997, Dutz and Hayri, 2000). This is particularly true in an economy where the limited size of the domestic market makes domestic economic liberalization inseparable from opening up to foreign competition (Hoekman, Kee and Olarreaga, 2001). Second, because the growth in external demand for Palestinian goods, should they become more competitive, is potentially higher than the demand for additional Palestinian workers abroad.

A termination of the possibilities for Palestinians to work in Israel is a major shock to the Palestinian economy. As observed since October 2000, it has immediate negative consequences on incomes and living standards of the population (World Bank, 2001a). But there may be at least one positive aspect: it might help in the longer run to encourage a reallocation of resources towards export-oriented activities.

In this paper we assess the importance of this issue, and try to identify which reforms could ease a transition towards an alternative model of development, where the exports of goods would be encouraged to substitute for the exports of labor. One important aspect will be to insure that short-term policies, aimed at minimizing the negative social impact of separation will not undermine longer run strategies. The latter should notably concern trade and fiscal regimes, labor markets, infrastructure, investments and financial markets, and public expenditures and domestic competition.

In order to illustrate the relative importance of these factors, a dynamic general equilibrium model is used. The model is not only dynamic in the sense that it is solved recursively until 2010, but also because it incorporates some of the likely endogenous dynamic effects of a real exchange rate depreciation on notably productive investment and total factor productivity. These dynamic effects are being accounted for to capture the potential negative impact of the Dutch disease on growth. In particular, if neo-classical, competitive conditions prevail in the

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[1] In what follows, exports of "labor", refers to exports of labor services measured by worker's remittances, and exports of "goods" refers to exports of goods and services.

[2] To our knowledge only one paper considers this theoretical case (McCormick and Wahba, 2000). McCormick and Wahba suggest that overseas employment may be socially sub-optimal if domestic wages are low compared to per capita remittances.

[3] See Naqib (2000) for a general discussion on the positive and negative impacts of integration since 1967.

[4] There is no single reason for the poor investment performance, notably during the post-Oslo period (Kanaan, 1998). Undoubtedly, continued political and economical instability was a major contributing factor behind the poor performance; slow progress in improving the regulatory and judicial framework was achieved, which further increased the perceived risk of investment, discouraging potential investors; the lack of external outlets and the low competitiveness of the Palestinian economy also likely reduced incentives to use WBG as a platform to reach neighboring markets.

economy, a shrinking tradable sector is not harmful *per se*. However, if there is an intrinsic positive link between openness – and hence the importance of the tradable sector – and investments and productivity, the presence of a Dutch disease phenomenon can potentially be highly damaging, especially in the longer run.

We believe that such a model is particularly well suited to assess the net impact of the different, and often contradicting, mechanisms that are at play. On the one hand, a depreciation of the real exchange rate could entail the above-mentioned positive effects on income growth. On the other hand, the loss in workers remittances could also affect households' savings negatively, and in turn investment and growth. The magnitude of these effects, and their net balance, is not straightforward, and remains mostly an empirical issue. In this respect, general equilibrium models have become standard tools for integrated empirical assessment, for their capacity to combine a detailed and consistent database with a sound theoretical framework.

The rest of the paper is organized as follows. Section II assesses the effect of exporting labor on the competitiveness of the Palestinian export industry. Section III discusses the implications of different policies on the potential long run growth rate of the economy. Finally, section IV presents concluding remarks.

II. Is Exporting Labor and Exporting Goods Incompatible in WBG?

Several theoretical channels could justify the existence of such an incompatibility. First, large revenues from abroad tend to increase the demand for goods and services, both imported and domestically produced. West Bank and Gaza being a price taker on the world markets, the price of imports is not affected by the amount of workers remittances. But on the other hand, the price of domestic goods increases with inflows of remittances. This in turn exerts an upward pressure on the price of domestic factors of production (physical capital, land, labor), and reduces the competitiveness of the economy. Consequently, factors are reallocated towards non-competing activities, imports increase and exports decrease. This is comparable to the so-called "Dutch Disease" phenomenon which has been observed in many countries after a resource boom (Corden, 1984). The current patterns of production in WBG is symptomatic of this disease, with a very large share of production factors concentrated in non-tradable activities, one being the Palestinian Authority.[5]

Second, the possibility for Palestinian workers to commute to Israel, where wages were on average 77 percent higher than in WBG over the period 1995-99 undoubtedly pulled up reservation wages, in comparison to a situation where access to the Israeli market was not possible.[6,7] The limited number of workers being able to actually get a job in Israel, due to the policy of labor permits undertaken since 1993, however prevents wage equalization between the two markets. This is typical of a situation of labor market dualism (Harris and Todaro, 1970), in which workers might prefer to queue for a better job (in Israel) rather than actually working (in WBG)[8].

Third, worker remittances, but also capital transfers from the Diaspora and from the international community allow financing of the disconnection of domestic prices from world prices. This phenomenon, harmful for the export industry, could be limited in amplitude through devaluation, or through expansionary monetary policies. This remains however impossible in WBG, in the absence of a national currency, and the impossibility to influence the Israeli monetary policy, and renders unavoidable a real appreciation of the exchange rate with such an inflow of workers remittances[9].

On the other hand, there are some arguments that support the idea that exporting labor could favor the export industry in the long run. They revolve around the idea that worker remittances can be invested in the home country, which could improve competitiveness, and/or that workers accumulate human capital – through a learning by doing process – in foreign countries (Wahba and McCormick, 2000), which could in turn be used in the country of origin to innovate and increase productivity. A third argument is that working abroad

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[5] The significant amount of foreign aid which has flowed into WBG since the signing of the Oslo agreement in 1993 – in total nearly US$3 billion, or more than 10 percent of total GDP over the last 7 years – has most likely accentuated the Dutch disease symptoms created by the export of labor to Israel. The capacity for fiscal management in WBG was limited and this paved the way for an expansion of public sector employment well beyond what can be justified in terms of the demand for public services. The increase in public sector demand for labor further pushed up wages and diverted employment away from the tradable sectors. Moreover, it did not have the effect to increase labor

participation, which has been observed in countries which witnessed a rapid expansion of the public payroll. This, is probably because women, who often make up the largest share of public employees, remained largely outside of the labor force, since most of the jobs created in the PA have been in security services, almost exclusively employing men. This is far from saying that foreign aid had a *net* negative impact on the economic development in WBG, but rather that it could have produced more significant results under a better macro-economic environment. Some simulations run in section III illustrate this point.

[6] Analysis of the determinants of earnings using Mincer-type regressions on 1999 labor force survey data indicate a 91 percent premium for commuting to an Israeli job, controlling for individual factors (Ruppert, 2001).

[7] Several factors might explain higher wage levels in Israel: higher capital/labor ratio in Israel, excess Israeli demand for unskilled labor, or minimum wage and other labor legislation (Ruppert, 2001).

[8] See Annex for a discussion and some econometric tests on this issue.

[9] According to Shafik (1997), it is also recommended to invest the windfall wisely and gradually so as not to distort further domestic prices after a resource boom. This recommendation, which generally applies to countries where governments control resource revenues, is rendered more difficult to implement in the Palestinian case, where households directly receive the rent created by the market segmentation. Moreover, these households are on average among the poorest, with low human capital and high dependency ratios, and have consequently low saving rates.

could facilitate the establishment of ties with foreign markets, which could help in developing new export markets. If the first argument might present some relevance for the Palestinian case, the two others are probably less valid. The reasons are twofold. First, Palestinian workers remain confined in unskilled jobs, with no possibility of access to "good" positions in Israel, which would remunerate the use of their human capital. Second, the post-67 history of close ties between Israel and WBG does not seem to have paid-off in terms of export growth for the Palestinians.

In the following paragraphs, we try to get a quantitative sense of the impact of Palestinian labor flows to Israel on export competitiveness. In order to do so, we use a general equilibrium model calibrated for the Palestinian economy using data from 1998, to simulate the impact of a permanent closure of the Israeli labor market on the Palestinian export performance. A detailed presentation of the model is provided in the Annex. To summarize, the model describes both demand (intermediate consumption, final consumption, investment, government expenditures, exports) and supply (domestic production, imports) in the Palestinian economy, with flexible prices clearing all markets (factors and products markets). The West Bank and Gaza is assumed to be a price taker in international markets, so its export and import prices are fixed. With respect to exports, it means that the world demand addressed to Palestinian goods is infinite (except in Israel, in which some market power to Palestinian exporters is assumed, see below), provided that West Bank and Gaza sells its goods at the predetermined international price. Two factors prevent an infinite increase in exports: the limited availability of productive resources, and constant returns to scale. In addition, the model allows producers to trade-off between exporting their goods and selling them in the domestic market, depending on the compared remuneration they can obtain in the two markets. If domestic markets provide higher remuneration, producers will destine a larger share of their production to the domestic market and/or reallocate their resources into non-tradable activities.

In the short run, we believe that two aspects are of crucial importance in the determination of the impact of exporting labor on export supply: labor supply and the response of the export industry to a change in labor cost. The fundamental question is to know to what extent the domestic labor market will be able to absorb Palestinian workers formerly working in Israel. This will depend simultaneously on how real wages will react to the return of workers, and on the extent to which the Palestinian export industry will be able to benefit of depressed nominal wages to develop new markets abroad.

To illustrate the importance of these two dimensions on the consequences of a permanent closure of the Israeli labor market, we simulate such closure under different conditions, using a short-run static version of the model. Results are reported in Table 1, where we cross tabulate three dimensions. First, we

distinguish two cases regarding labor participation: one in which none of the workers previously employed in Israel supplies his labor force in the West Bank and Gaza ("No additional labor supply"); the other one in which all the workers previously working in Israel supply their labor force in the West Bank and Gaza ("Additional labor supply"). Second, we distinguish two polar cases regarding wage determination: one with full wage flexibility and one with strict nominal wage rigidity. Third, we distinguish two cases regarding export supply: one in which it is very difficult for industries to shift their production towards export markets despite higher remuneration on external markets; one in which industries can easily shift a larger share of their production towards export markets to benefit of higher remuneration[10]. One common feature to all scenarios is the loss of workers remittances from Israel, which inevitably depresses incomes and the demand for domestic products.

Consider first the top half of Table 1, where unrestricted external access for goods is assumed. In case of full wage flexibility, exports receipts grow by 75 percent with respect to the initial situation. This is because the return of all workers previously employed in Israel to the domestic labor market not only augments the domestic production capacity, but also exerts a strong downward pressure on real wages, which drop by more than 10 percent. Nominal wages decrease even further. This tends to raise external competitiveness to the benefit of export receipts. What now if none of the workers previously employed in Israel decide to work in WBG? Domestic production capacity remain unchanged with respect to the initial situation, and real wages are almost unaffected. Still, the external competitiveness of the Palestinian industry is improved due to a drop in nominal wages (an estimated drop of 10 percent in this case). In addition, the depressed domestic demand coupled with the assumed high degree of substitution between domestic and external markets lead producers to sell a larger share of their output on external markets. Exports receipts are estimated to increase by 37 percent in this case.

In case of nominal wage rigidity (second column of Table 1), the story is slightly different. Wage rigidity prevents the absorption by the domestic labor market of workers previously working in Israel. This explains why the outcome of the closure of the Israeli labor market remains the same with or without additional labor supply. Due to wage stickiness, there is no gain in nominal competitiveness, and exports (an estimated increase of 22 percent in export

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[10] Technically speaking, these two last cases are simulated by varying the elasticities (at the first and second level) of the constant elasticity of transformation function (CET), from zero to infinity. At the first level, the elasticity of transformation captures the degree of ease with which producers can shift their productions from external to domestic markets and vice-versa; at the second level, it captures the degree of ease with which producers can shift their exports from Israel to the Rest of the World and vice-versa

receipts) only grow because producers shift their outputs towards external markets to overcome the depressed domestic demand. Therefore, even in the absence of wage adjustment, the share of tradable goods in total output increases, after a permanent closure of the Israeli labor market.

The story is comparable, but with very different amplitudes, in case of restricted export outlets. Results in this case are reported in the last two lines of Table 1. As in the previous case, wage flexibility favors the absorption of workers previously employed in Israel and augments the productive capacities of the Palestinian industry. But the outcome in terms of export performance, +11 percent with respect to the initial situation, is much lower. Producers cannot benefit of the wage drop to gain significant market shares abroad, due to export restrictions. In the worst case of nominal wage rigidity, the combination of depressed demand and fixed wages leads to a recession (a decline in domestic economic activity). Producers do not gain any competitiveness, and cannot shift their production towards export markets, where the situation remains more favorable than on domestic markets.

The results obtained in these different cases are simply illustrative of the existence – at least in the short run – of a trade-off between exporting labor and exporting goods in WBG, through three possible channels: (i) through an increase in the capacity to export Palestinian goods, as a result of the increase in the labor force; (ii) through a gained wage-competitiveness on external markets as a result of a downward pressure on wages; (iii) through a shift of the domestic production towards external markets, to overcome the depressed demand on domestic markets. Only in the worst case of strong export restriction and wage rigidity one can observe a compatibility between exporting (less) labor and exporting (less) goods. But this situation also corresponds to the worst case scenario in terms of income and welfare for the population.

The results also tend to suggest that the key dimension to launch a dynamic of export-led growth is the possibility for Palestinian industries to shift their productions towards export markets – that is being able to reap the benefits of their newly-gained nominal competitiveness. On the other hand, the dimension of wage determination seems of lesser importance, since results obtained with the two polar cases of extreme flexibility and rigidity do not differ that much. Moreover, one can reasonably believe that Palestinian labor markets are highly flexible. There is currently no official minimum wage in place, and labor market regulation is very limited in the West Bank and Gaza (Alonso-Gamo et al., 1999). There is no formal unemployment insurance system either, which could lower labor participation and/or increase reservation wages. Besides, past experience shows large flexibility in nominal and real wages: according to the Palestinian Central Bureau of Statistic labor surveys, average nominal wages declined by more than 10 percent in 1996 with respect to the previous year, and

real wages declined by more than 20 percent. The largest declines in nominal wages were observed between the last quarter of 1995 and the first quarter of 1996, which experienced the largest number of days of closures. Moreover, the decline was observed in all sectors of activity. It seem therefore safe to assume that the condition of wage flexibility will be met in the case of a permanent closure, to absorb a significant part of workers previously employed in Israel. The potential for real wage adjustment will nevertheless probably be lower today than in 1996, where real wage flexibility was enhanced by high price inflation imported from Israel. Price inflation has since 1996 been significantly reduced.

Uncertainty regarding the second aspect – trade restrictions – is larger, and will depend on political developments. Available evidence shows that Palestinian producers face enormous constraints to external trade, apart from low wage-competitiveness. Data indicate that transaction costs in West Bank and Gaza are extremely high: on average 35 percent is added to the cost of producing goods in the West Bank and Gaza in order to bring them from the producer to the consumer. This is more than 3 times higher than the average premium in other countries in the Middle East and North Africa region (Astrup and Dessus, 2001). Available data does not allow an analysis into the causes of these extraordinarily high transaction costs, but it is safe to assume that they can be attributed for a large part to the extensive Israeli security checks. One must therefore ensure that labor closure will be counter-balanced by increased facilities to export, in order to avoid a lose-lose situation.

In any case per capita incomes would significantly decrease after a permanent closure: additional exports receipts will not compensate losses of worker remittances in the short run, and one must find means to boost economic growth using the leverage given by additional competitiveness. The next section explores under which policies the West Bank and Gaza could benefit from increased nominal competitiveness to foster economic growth and raise living standards.

III. Long Term Implications and Policies

The previous section has underlined the potential positive impact of labor closure on export performance. The question is in turn to know under which conditions it could also accelerate GDP growth and increase per capita incomes. The literature on outward orientation and growth remains controversial, see e.g. Rodriguez and Rodrik (1999). But in summary it is probably reasonable to say that outward orientation can play a catalyst role on economic growth by encouraging technological transfers, enlarging the range of investment opportunities and reinforcing competitive pressures. By exposing a larger share of the productive sphere to external markets, it also limits the responsiveness of prices to factor accumulation. In other words, using more labor and capital in an open economy will put a lower downward pressure on wages and capital rates of return than in a closed economy, since most prices are internationally determined. It is worth

stressing that international experience indicates that the ability of outward orientation to serve as a catalyst for growth is contingent on the implementation of appropriate domestic policies.

In the following paragraphs, we try to identify under which conditions the Palestinian economy could benefit from a closure of the Israeli labor market. Different scenarios are constructed and compared to a benchmark scenario in which the Israeli labor market would be progressively re-opened. This, in the sake of comparing the impact of the different long-run strategies - exporting labor versus exporting goods - even if this choice is not offered. What should be retained from this quantitative exercise is obviously not the absolute value of reported figures for e.g. GDP per capita, but rather the observed difference between the scenarios. Income levels might indeed be affected positively or negatively by a number of shocks (external, technological, climatic, political, etc.) over the next ten years, and this exercise does not at all pretend to be a forecasting one. The definition of a benchmark scenario is intended merely to define a baseline scenario to which alternative policy scenarios can be compared. We conduct sensitivity analyses, which suggest that the choice of the values for exogenous variables, within a realistic range, has no major consequences on the relative variations of the different economic aggregates with respect to the baseline scenario.

Scenarios are built under a set of exogenous assumptions regarding population growth and technological progress during the period 2000-2010. These assumptions are detailed in the Annex, and are the same for all scenarios. Other factors affecting growth through higher capital accumulation, labor supply and productivity growth respond directly to the degree of closure of the Israeli labor market, and to the nature of policies that could be undertaken to cope with such closure.

First, physical capital accumulation (investment) depends on the availability of savings originating from households, the government, and the Rest of the World, through foreign direct investment and official development assistance. Households' savings depend positively on their incomes, and government's savings on its policy (taxes and expenditures). Therefore, the higher the income of households, the faster the capital accumulation. The model distinguishes between productive and unproductive capital, with only the former being the source of GDP growth when accumulated (see Annex), and we assume that increased access to external markets enlarges the range of investment opportunities, and in turn the share of total savings invested into productive activities. Empirical evidence indeed indicate that there exists a positive relationship between investment and trade openness (Levine and Renelt, 1992, Sachs and Warner, 1995), and we draw on this literature to model this phenomenon for the West Bank and Gaza.

Second, labor supply depends positively on real wages and on the degree of closures. Empirical evidence since 1996 suggest that, during the periods of intense closures, the decrease in labor supply resulting from a decrease in real wages in WBG has been somewhat (but not completely) mitigated by a simultaneous decrease in the reservation wage. This, possibly because closures reduce the probability of getting a job in Israel, and therefore lowered wage expectations (see Annex).

Third, a large literature supports the idea that outward orientation favors total factor productivity growth, by encouraging technological transfers, reducing X-inefficiency and reinforcing competitive pressures. Following Dessus et al. (1999), we assume that an increase in the share of tradable activities in GDP is accompanied with an increase in the total factor productivity level, and we rely on the international empirical literature to model this phenomenon. In the special case of West Bank and Gaza, this likely effect could be further justified by the fact that, given the nature of incentives currently provided to individuals – and notably the fact that unskilled workers can sometimes earn more in Israel than skilled workers in WBG – it is likely that a large share of human capital remains underutilized, because it is concentrated in unproductive activities with low social returns on education.[11] The expansion of tradable activities, as well as a diminution of such kind of distorted incentives, could promote enhanced use of available human capital in growth-generating activities[12].

Finally, other factors influencing the evolution of the Palestinian economy are introduced in order to construct the different scenarios. First, we distinguish the nature of export opportunities for WBG in Israel on the one hand, and in the rest of the World, on the other hand. We assume that the lasting presence in Israeli markets, the close ties between Israeli businessmen and consumers, and the significant market shares developed in Israel imply that Palestinian producers have some market power in the Israeli goods markets. But this advantage is counterbalanced by the relatively limited growth prospects of the Israeli markets. On the contrary, Palestinian producers do not hold strong positions on international markets, and face tough competition to develop new markets. But should they produce goods at competitive prices, their prospects in terms of export outlets in the World are significantly larger than in Israel. Second, we assume that the capacity of producers to shift their production from external to

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[11] See Pissarides (2000) for a general discussion on the impact of the economic environment (labor market institutions, trade policies) on the social returns to education, and Pritchett (1999) on education and growth in the MENA region.

[12] According to Shaban (1999), skilled workers suffer more from limited international trade in West Bank and Gaza than unskilled workers. This is particularly damaging to the Palestinian economy given its large endowment of educated workers, and encourages their migration abroad (and similarly limits the return of the skilled Diaspora).

domestic markets and vice-versa depending on relative remuneration is moderate with regard to international standards, and limited at the second level, that is between Israel and the Rest of the World. Given the latter elasticity's influence on the results, already underlined in the previous section, a sensitivity analysis is performed in the Annex on the choice of its value. Third, it is assumed that the capacity of entrepreneurs to adjust their production techniques to new opportunities is larger with the latest vintage of capital, i.e. investments, than with the already installed capital, for which little substitution possibility is given between intermediary inputs, labor and capital. Finally, we assume that real government expenditures grow at the same pace than population. Public receipts, and therefore public savings, depend on the tax structure and the economic activity.

Under these general conditions[13], it appears that the increased export competitiveness created by reduced access to the Israeli labor market will not in itself suffice to compensate for the loss in workers' remittances over the ten years to come, see Figure 1 and Table 2, Scenarios 1 and 2. On the other hand, Figure 1 illustrates the larger long run *growth* potential in the case of restricted access to the Israeli labor market. In the "Unrestricted access" scenario, where we assume that in 2003 the number of Palestinians workers returns to its pre-Intifada level of 125,000 and grows annually by 2 percent onward, the annual growth rate in per capita income from 2003 to 2010 is -0.2 percent. By comparison, in the scenario, where the access to the Israeli labor market remains restricted, the corresponding annual growth rate in per capita income exceeds 0.6 percent from 2003 onwards. This is in particular because the share of exports over GDP grows more rapidly with labor closures than without. In 2010, this share exceeds 28 percent with closures, against 22 percent in the absence of closures. It is also worth mentioning that this difference is almost entirely obtained by an increase in exports destined to the Rest of the World, while export volumes to Israel remaining almost unchanged. Exports to the rest of the World represent more than one-third of total exports in 2010, against one-fourth with restricted access for Palestinian labor to the Israeli labor market. Therefore, a diminution of exports of labor would not only permit an increase of exports of goods, but would also favor their diversification in terms of destination.

In the following we illustrate what type of policies could further encourage a development path based on the promotion of exports. And what type of policies may be detrimental to such a path.

In the short run, the Palestinian Authority might be tempted to reduce the social impact of labor closures by augmenting its level of current expenditures to play a counter-cyclical role and to provide jobs to the newly unemployed (Table 2, Scenario 3). This, in particular in the current situation of low inflation and limited public indebtedness. Given the general drop in wages after labor closure, keeping the same level of *nominal* expenditures would actually suffice to increase significantly the level of real expenditures and public employment. Expansionary policies would however be damaging for two reasons. First, because of the general slowdown of the economy, expenditures would increase more rapidly than government revenue, thereby increasing the government deficit, which would reduce total available savings. Second, because it would hamper the development of tradable activities, and their positive impact on productive investment and total factor productivity. Indeed, simulating the combined impact of labor closure and increased real government expenditure suggests that this situation would be particularly harmful for productive investment, which would suffer from a lack of available savings and reduced incentives to invest. As compared to the situation where the Palestinian Authority maintains its current prudent fiscal stance, productive investment would be two times lower in 2010. Despite the large labor content of public expenditures, employment creation would be reduced in the longer term with increased public expenditures. As a result, real incomes per capita would stagnate at their 2001 level , and the launching of new dynamics based on export growth would be prevented.

Another risk in the short run might come from the fact that wrong investment decisions are likely to be made in the context of labor closures, which are generally accompanied by movement restrictions on goods. Instead of developing into an export-oriented economy, signals sent by closures drive the economy into localized autarky, with production aimed at the local market (Shaban, 1999). Therefore, all possible steps must be taken to disconnect labor closures from restrictions on international trade and the internal mobility of goods and people. In addition to concentrating diplomatic efforts to maintain internal mobility and physical access to borders, significant measure could be taken domestically to insure that wrong incentives are not given to investors and producers.

One crucial aspect is to develop a trade infrastructure which would permit circumventing the current quasi-exclusive use of Israeli trade infrastructures by providing alternative trade routes, through Jordan, Egypt as well as via air, and sea for Gaza. This would reduce the current extraordinary high transport costs, and mitigate the risk of trade interruption occurring with Israeli closure policies. This would encourage exports, first because transport costs would be reduced,

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[13] For the sake of simplicity, this exercise does not account for the internal effects of the current political crisis – the Al aqsa intifada –- on the Palestinian economy. Accounting for the actual effect of internal closures on the domestic economy, that is a general decrease in productivity and a segmentation of factor and good markets, would only complicate the discourse without affecting its general conclusion.

and second because imports, which are largely used in the production of tradable goods, would also be cheaper, and available with a larger choice of origins[14].

A second important aspect is to insure that the financial system does not excessively drive private investments into unproductive activities and/or into firms which destine all their production to the local market. Specifically, financial instruments coping with the inherent risk associated with exports could be developed, and complemented by an export promotion agency which would facilitate export procedures, provide information on export opportunities and regulations and try to develop business links with the Diaspora. Artificial barriers to entry into business, and existing monopolies should be at maximum eliminated in order to promote domestic competition, which is a necessary condition to insure an efficient allocation of resources, and in turn to face external competition.

Third, the fiscal regime should eliminate practices which are currently harmful to exporters. First, these include long delays in the refunding of VAT for exporters, who according to regulations are exempted of it. The second one, probably more damaging, is the very low effective rate of VAT collection on domestic activity, in comparison to the VAT collected on imports. This tends to favor the demand for domestic goods, to the detriment of exports.

Finally, the trade regime should be more in accordance with a strategy of boosting the export of goods rather than labor. According to Palestinian officials, the acceptance of the Paris protocol, which formalized the *de facto* customs union with Israel in effect since 1967, was ultimately conditioned to the free access of Palestinian workers to Israel. Astrup and Dessus (2001) suggest that the current trade regime, which grants preferential trade between Israel and WBG, has created a harmful trade diversion, and impeded the expansion of trade links with the rest of the world. If a situation of labor closure was to persist, it would become counter-productive to continue to grant preferential access to Israeli goods, while at the same time being largely prevented from exporting labor and goods to Israel. The adoption of a more neutral trade regime, in which Israel would be considered as any other partner, would then become more attractive.

The next simulation illustrates the potential impact of such kind of policies, aimed at providing the most favorable economic environment to cope with the harmful labor closure (Table 2, Scenario 4). Specifically, we simulate the implementation of a non-discriminatory trade regime, in which tariffs would be set to zero, effective VAT rates between imports and domestic goods would be harmonized and fixed at a level (7 percent) which would leave total tax revenues

unchanged. It is worth mentioning that these policies would have been impossible to implement in the framework of the Paris protocol, which leaves very limited room of maneuver for VAT or tariff reform[15].

Results suggest that trade liberalization and fiscal reform clearly magnify the potential *growth* impact of the real depreciation resulting from labor closure, see Figure 2. Productive investment represents in 2010 the equivalent of 20 percent of the GDP (against 16 percent in the case of unrestricted access to the Israeli labor market). The difference comes from the fact that a much larger share of investment is devoted to productive activities in the first case, while the amount of unproductive investment remains comparable in the two cases. Job creation, boosted by exports of labor intensive goods and complementary investments, grows by more than 6 percent a year, a rate sufficient to absorb new entrants and to encourage female labor participation. Exports account for 35 percent of GDP in 2010, and more than half of them are destined to the rest of the word.

From 2003 onwards, the difference in annual per capita income growth rates between the two cases exceeds 2 percent (1.9 against -0.2). But this differential is actually restrained by savings availability, which becomes a binding constraint in the case of a rapid demand for investment funds. Relaxing this constraint would be much more rewarding in this framework than in the absence of trade liberalization and fiscal reform. It could be relaxed by increased foreign direct investment from the Diaspora, and/or increased external assistance. As an example, increasing foreign savings flowing to the Palestinian economy by 10 percent each year would only boost the annual per capita income growth rate by 0.2 percentage points with unrestricted access to the Israeli market. A corresponding increase in foreign savings in a situation where appropriate policies would be put in place to reduce the negative impacts of labor closure could add 0.4 percentage points to the already higher annual growth rate (Table 2, Scenario 5 and 6). As another example, an increase in technological transfers, simulated by a 0.5 percent additional TFP growth each year would add 0.7 percentage points in per capita income growth rate in the first situation, against 1.0 percentage points in the second one (Table 2, Scenario 7 and 8).

IV. Conclusion

In this paper, we develop a dynamic general equilibrium model to assess the impact of restricted access to the Israeli labor market for the Palestinian workers on the Palestinian export performance, and in turn, on GDP growth. The results reported should obviously not be considered as predictions of the future economic trends for the Palestinian economy, because these will be largely shaped by – inherently unpredictable – political decisions, and because our

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[14] According to Rutherford and Tarr (2000), an increased diversification in the origin of imports, and therefore a larger variety of accessible inputs, could allow producers to increase productivity through selection of intermediate inputs that match more closely their production requirements.

[15] See Astrup and Dessus (2001) for a presentation of the Paris protocol and a detailed discussion of the impact of trade reforms on the Palestinian economy.

knowledge of many of the economic phenomenon at stake remains limited. This quantitative exercise should rather be understood as an illustration of the relative importance of a number of key factors for the economic development of the West Bank and Gaza. In particular, our results suggest that exporting large flows of Palestinian labor services to Israel tend to reduce the capacity of the Palestinian industry to export goods. Second, that it is most likely – even under optimistic assumptions on the export-led growth potential of the Palestinian economy – that the export enhancing depreciation of the real exchange rate after a closure of the Israeli labor market will not be sufficient to avoid large income losses for the Palestinian population. Third, that the adoption of appropriate trade and fiscal policies in this context could significantly magnify the potential impact of a real exchange rate depreciation on GDP growth. Fourth, that external assistance is likely to have then a larger developmental impact, than in the case of a re-opening of the Israeli labor market to Palestinian workers.

This being said, recent events have clearly illustrated how socially harmful labor closures are to the Palestinian population. And, re-gaining access to the Israeli labor markets would almost immediately boost incomes for a large part of the population.[16] The trade-off between significant short-term costs in terms of lower average incomes during the period of transition and potentially larger long-term gains from outward-orientation, facilitated by appropriate trade and fiscal policies, is politically complicated. This, even more so, because policy reform can be expected to be opposed by groups benefiting from the current system. In addition, it may be argued that greater openness and increased exposure to international competition may amplify the volatility of the Palestinian economy. The latter need not, however, be the case: the Palestinian economy is already highly vulnerable to external shocks, notably the enforcement of Israeli security measures, but also to the cyclical behavior of the Israeli construction sector, which employed more than half of the Palestinian workers in Israel prior to the outbreak of the Intifada.

One way of launching a gradual move away from the reliance on the export of labor to Israel would be for the Palestinian Authority to institute a system of fee-based permits for Palestinian labor working in Israel. Apart from generating revenue such a system would reduce the incentives for Palestinians to work in Israel. Part of the burden of such a scheme would most probably be borne by Israeli employers because of the less-than-perfect possibilities of substitution between Palestinian workers and other potential employees.

On the other hand, it is by no means certain that the Palestinian Authority may be offered the *choice* to initiate a gradual move away from the reliance on the export of labor. In this case, a termination of the possibilities for Palestinians to work in Israel should definitely be accompanied by policies which would help to maximize the potential positive impacts created by this new situation. Efforts from the Palestinians will be required to adapt their economic policies and to modernize their economy. Efforts from the Israelis will be required to compensate the lost access to the Israeli labor market by a greater opening of the Palestinian economy to the rest of the world. Under these conditions only, a positive transition moving the Palestinian economy from exporting labor to exporting goods could be launched. If these conditions are not met a lose-lose situation which would undermine the development potentialities of the Palestinian economy in the long run and the living standards of its population will materialize.

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[16] The recent World Bank's report on poverty in the West Bank and Gaza (World Bank, 2001b) suggests that the poor have particularly benefited from the re-openness of the Israeli labor market during the period 1996-98. Conversely, it is likely that a closure of the Israeli labor market should particularly affect the poor and near poor.

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Figure 1: Real Per Capita Income ($1998)
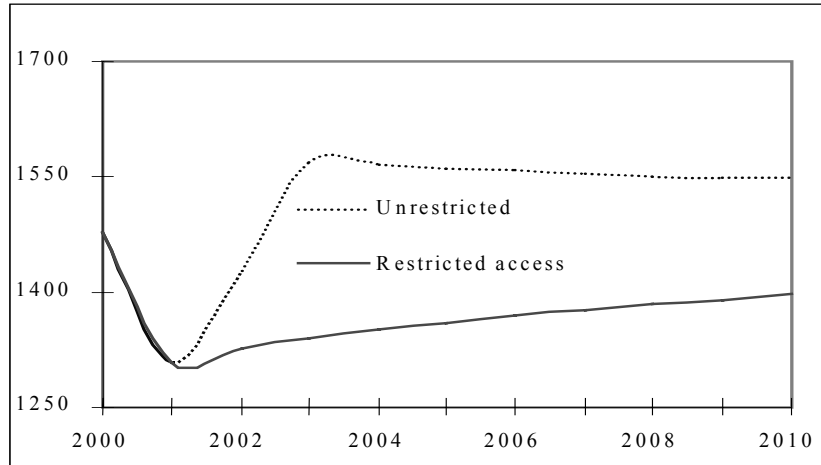
Figure 2: Real Per Capita Income ($1998)
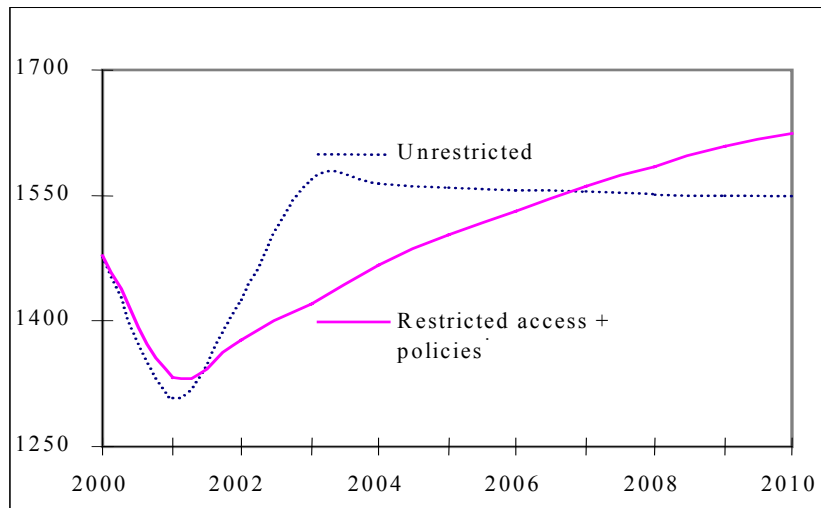
Table 1: Impact of Labor Closure on Export Receipts under Different Theoretical Conditions

	Wage Flexibility	Nominal Wage Rigidity
Unlimited external goods access		
Additional labor supply	75%	22%
No additional labor supply	37%	22%
Constrained external goods access		
Additional labor supply	11%	-3%
No additional labor supply	2%	-3%

Source: Authors' calculations. Note: results obtained using a static version of the CGE model, with no sectoral capital mobility.

Table 2: Macroeconomic Aggregates, 2000-2010, Under Different Scenarios. (index 2000=100).

	Year	Per capita Income	Productive Investment	Export Receipts
	2000	100	100	100
Scenario 1	2003	106	109	113
	2010	105	129	168
Scenario 2	2003	91	115	142
	2010	95	134	223
Scenario 3	2003	89	94	132
	2010	83	70	173
Scenario 4	2003	96	143	180
	2010	110	184	334
Scenario 5	2003	108	117	111
	2010	107	142	170
Scenario 6	2003	97	155	176
	2010	114	205	342
Scenario 7	2003	108	112	115
	2010	112	144	188
Scenario 8	2003	98	146	187
	2010	119	205	375

Notes: Income and investment figures are in real terms. Scenario 1: progressive re-opening of the Israeli labor market; Scenario 2: permanent closure of the Israeli labor market; Scenario 3: permanent closure of the Israeli labor market and expansionary fiscal policy; Scenario 4: permanent closure of the Israeli labor market, trade liberalization & VAT reform; Scenario 5: progressive re-opening of the Israeli labor market and aid increase; Scenario 6: permanent closure of the Israeli labor market, trade liberalization & VAT reform, and aid increase; Scenario 7: progressive re-opening of the Israeli labor market and technological transfers; Scenario 8: permanent closure of the Israeli labor market, trade liberalization & VAT reform, and technological transfers.

Annex: The Model

The Model used in this paper is a dynamic version of the model developed for West Bank and Gaza by the World Bank to assess the impact of trade reforms under a final status agreement. The following paragraphs are not intended to describe precisely the characteristics of the model employed here, but rather to describe in non-mathematical terms its main hypotheses, mechanisms, and the statistical information used for the Palestinian economy. Given its (recursive) dynamic nature, special attention is nevertheless paid in this Annex to several features of the model aimed at analyzing the growth implications of different scenarios. The reader may refer to Astrup and Dessus (2001) for a technical description of the static model.

The model is calibrated using a Social Accounting Matrix for the year 1998. The Macro SAM, as well as tables recapitulating the main assumptions and the major behavioral elasticities used in the model are reported at the end of the Annex. The model considers one representative Palestinian household and 7 economic sectors: agriculture, manufacturing, construction, commerce, transports, private services, public services. The model distinguishes two trading partners for the Palestinian economy: Israel, and the Rest of the World (ROW). The model is simulated each year from 1998 to 2010, and its basic features are summarized below.

Prices are endogenous in each market (goods, factors) and equalize supplies and demands, so as to obtain the equilibrium. Supply is modeled using nested constant elasticity of substitution (CES) functions, which describe the substitution and complement relations among the various inputs. Producers are cost-minimizers and constant return to scale is assumed. Output results from two composite goods: intermediate consumption and value added. The intermediate aggregate is obtained by combining all products in fixed proportions (Leontief structure). The value-added is then decomposed in two substitutable parts: labor and capital. Labor is fully employed and perfectly mobile across sectors. Demand for productive physical capital makes a distinction between "old capital" and "new" capital. The model thus integrates the notion of vintage capital, to distinguish the process of allocating capital already installed, from that resulting from contemporary investment (putty/semi-putty production function). "New" capital can be allocated more flexibly than "old" capital. Accelerating investment therefore strengthens the capacity for adjustment of the productive sector to changes in relative prices.

The income from labor (originating from WBG and Israel) and capital is allocated to the representative household. Household demand is derived from maximizing the utility function, subject to the constraints of available income and consumer price vector. Household utility is a positive function of consumption of the various products and savings. Income elasticities are

differentiated by product. The calibration of the model determines a per capita subsistence minimum for each product, which will be consumed whatever the price and the income of the households, while the remaining demand is derived through an optimization process. Government and investment (both productive and unproductive) demands are disaggregated in sectoral demands once their total value is determined according to fixed coefficient functions.

The model assumes imperfect substitution among goods originating from different geographical areas. Import demand results from a CES aggregation function of domestic and imported goods. Export supply is symmetrically modeled as a constant elasticity of transformation function. Producers decide to allocate their output to domestic or foreign markets responding to relative prices. At the second stage, importers (exporters) choose the optimal choice of demand (supply) across regions (Israel or the Rest of the World), again as a function of the relative imports (exports) prices and the degree of substitution across regions.

Several macro-economic constraints are introduced in this model. First, the small country assumption holds, the Palestinian economy being unable to change world prices; thus, its import and export prices on world markets are exogenous. A distinction is made with regards to Israel, where it is assumed that Palestinian exporters have some market power. On the other hand, they are price takers on Israeli imports. Capital transfers (including workers remittances) are exogenous as well, and therefore the trade balance is fixed, so as to achieve the balance of payments equilibrium. Second, the model imposes fixed public expenditures, to reflect the government choices. Third, investment is determined by the availability of savings, the latter originating from households, government and abroad.

The sequential dynamic path of the model results from this last closure rule, with capital stock being accumulated through past investments (using a permanent inventory type specification, with a 5 percent depreciation rate). But the model distinguishes between accumulation of productive and unproductive capital, where only the former being a source of increased productive capacities and GDP growth. Following the work of Levine and Renelt (1992), the model allows for a positive relationship between trade openness and productive investment, and we draw on their results to calibrate this relationship for the West Bank and Gaza (see below). Labor participation is influenced by the underlying demographic trends but also responds to changes in the real wage and the degree of accessibility to the Israeli labor market (see below). Finally, the model builds upon a large literature which supports the idea that outward orientation is favorable to total factor productivity, by encouraging technological transfers, reducing X-inefficiency and reinforcing competitive pressures. Following Dessus et al. (1999), we assume that an increase in the share of tradable activities is accompanied by an increase in the total factor productivity level, and we rely on

the international empirical literature to model this phenomenon. Specifically, a value of 0.1 is retained for the elasticity of the TFP level with respect to the share of tradable goods in GDP.

Trade and Investment

The link between investment and trade has been largely documented in the empirical literature on long-run growth. Systematically evaluating the robustness of partial correlation between the share of investment to GDP and a wider assortment of economic indicators on cross-country data, Levine and Renelt (1992) only find a positive and robust correlation between investment and the share of trade to GDP. Estimating a simultaneous equation system to explain growth and investment on the same data set, Chou (1997) also observes a positive and significant impact of exports on investment. Using a composite index of trade openness, Sachs and Warner (1995) also reach the conclusion of a positive and significant impact of openness on investment. Finally, Dessus (1998) observes a co-integrated relationship between capital accumulation and the share of exports to GDP in Taiwan during the period 1951-90.

More uncertain is the question of how exactly exports or imports encourage investment. Baldwin and Seghezza (1996) present several theoretical openness-and-growth links that can account for trade-induced investment-led growth. Some assumptions not generally retained in neo-classical models are necessary to explain several key aspects of the econometric evidence on trade and investment mentioned above. In particular, cross-country data suggests that trade expansion promotes investment in all countries whatever the capital-intensity of their exports, contrary to predictions of the Hecksher-Olhin model.

A key assumption then retained to obtain this result theoretically is that traded goods are more capital intensive than non-traded goods, which, according to the authors, seems to be widely supported by empirical evidence. Consequently, the larger the share of trade in GDP, the larger the demand for capital. A symmetric presumption advanced by the authors is that investment-goods production uses traded intermediates. In this case also, trade liberalization lowers the marginal cost of investment goods and thereby the lowers the price of capital. A related set of assumption revolves around the idea that outward orientation increases competitive pressure. It lowers in turn prices in the investment-goods industry and increases the output of traded goods, both of which induce an increase in the demand for capital. In line with Chou (1997), a third set of assumptions could be added to the former, in the context of the accelerator principle theory with imperfect substitution between domestic goods destined to the local market and domestic goods destined to the export market. In this case, increased export outlets (standing for anticipated demand) provide investors with an incentive to accumulate capital at a faster pace than in the case where supply is constrained by the growth of domestic demand for capital intensive goods.

To what extent are these considerations relevant to the modeling of investment decision in West Bank and Gaza? In the Palestinian economy, more than half of total investment is concentrated into unproductive investment, such as residential building. It is therefore important to make a clear distinction between productive and unproductive investment. This, with respect to the impact of investment on growth – with only the productive investment being assumed to increase productive capacities – but also with respect to the composition of investment expenditures: typically, it is believed that the share of traded goods (machines, equipment, by opposition to construction services) will be larger in the total amount of productive investment expenditures than in the total amount of unproductive investment expenditures. Moreover, investments are constrained by the availability of savings. External and internal borrowing capacity is indeed extremely limited in the Palestinian economy, given its high risk level. In this context, we assume that the productive investment function takes the form:

$$I_p / S = a\,T^\beta \qquad\qquad (1)$$

where Ip is the productive investment, S are domestic savings, and T an index of trade openness. We then retain the closure rule that savings equal total investment (both productive and unproductive investment).

$$I_p + I_{np} = S \quad \text{with} \quad I_p, I_{np} > 0 \qquad\qquad (2)$$

Finally, we choose the share of export in GDP as the index of trade openness.[17] Therefore, changes in investment flows will be both the result of changes in total savings, and changes in the share of savings which are allocated to productive investment. One might write this as:

$$\partial I_p / I_p = \partial S / S + \beta.\partial T / T \quad \text{and} \quad \partial I_{np} = \partial S - \partial I_p \qquad\qquad (3)$$

In the absence of possible econometric estimation of β elasticity in the specific case of West Bank and Gaza, we rely on the international empirical literature, and on a simple estimation to determine its value. Even if estimates of Levine and Renelt (1992) are considered as robust ones, we cannot rely on it, for the simple reason that the elasticity of investment with respect to trade is imposed (to

be equal to unity), and not estimated. We therefore rely on two other sets of published estimates, as well as on some simple econometric work.

Chou (1997), using cross section data for the period 1960-89, obtains a value of 0.3 for the elasticity of the share of investment in GDP with respect to the share of exports in GDP. Dessus (1998), using time series for Taiwan, estimates a flexible accelerator model in which the capital stock depends notably on the share of exports in GDP. The implicit elasticity of investment with respect to the share of exports in GDP is also around 0.3. Finally, we estimate a simple relationship between investment and exports, on panel data for 60 countries over the period 1960-1996, using the least square dummy variable (LSDV) estimator.[18] Results strongly suggest that (the log of) investment reacts to a change in (the log of) exports over the previous year. Different models are tested, including or not right hand side variables country-specific time trends, yearly dummies to capture worldwide shocks, and GDP growth (to account for an accelerator effect). The elasticity of investment with respect to exports obtained using different specification forms varies between 0.2 and 0.5, and the long-term nature of the relationship is confirmed by the estimation of an error correction model in which the correction term appears to be highly significant. To grossly illustrate the impact of trade expansion on productive investment in the West Bank and Gaza we therefore retain a value of 1/3 for β.

Labor Supply
The response of labor supply to wage conditions, both in the WGB and Israel is a major determinant of export performance in case of a restricted access to the Israeli market. But, in spite of extensive existing theoretical and quantitative analysis of Palestinian workers behaviors (Ruppert, 2001), the lack of statistical observations over a long period of time precludes a deep econometric investigation on the impact of closures on labor supply. Nevertheless, we estimate a very gross model here, which provides some useful insights on the impact of wages and closures on labor supply. It consists in regressing the (log of) labor force participation rate, LPR, on the log of real wage level in WBG, RW, as well as on the degree of external closure, CL.[19] This specification might be understood as a reduced form of a model in which labor participation depends on effective domestic real wages and expected real wages in Israel, the latter being inter alia a negative function of the degree of closure. For a given wage level in the domestic economy, the higher the reservation wage (which depends on the expected wage in Israel), the lower the overall participation rate will be.

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[17] The choice of trade intensity measure is admittedly a tricky issue for empirical analysis. The measure most frequently used in the literature -the ratio of imports plus exports over GDP- has been largely criticized (Pritchett, 1996), because it does necessarily reflect the sole impact of trade policies. Nevertheless, the purpose of the present exercise is not to assess the link between trade (or other) policies and trade flows, for which the CGE model is used, but rather the link between investment and observed trade intensity. Besides, a recent debate has evolved around the choice of exports *versus* imports to capture the real impact of trade on growth and investment. However, this important issue in terms of policy recommendation is not greatly sensitive in a CGE framework, where trade balances are fixed.

[18] Results are available from the authors. Data are extracted from the World Bank's World Development Indicators.

[19] The degree of closure is measured by the number of days of closures divided by the number of working days each quarter (source: UNSCO).

In order to cope with the likely endogeneity of domestic real wages, we use an instrumental estimation method. The instrument retained is the (log of) consumer price index in Israel. Using quarterly data from March 1996 until September 2000, we obtain the following result (T-students in brackets):

$$\text{Ln } (LFS) = -0.62 + 0.34 \ln (RW) + 0.06 \, CL \qquad \text{Adj. R}^2\text{: 0.59 DW:}$$
$$\phantom{\text{Ln } (LFS) = }(10.1) \quad (4.4) \qquad (1.8)$$

These preliminary results suggest that an increased access to the Israeli labor market tend to pull up the reservation wage of Palestinian workers, thereby reducing the overall labor participation rate. The estimated elasticity of labor supply with respect to real wages, around 1/3, is in line with international experience. This elasticity, as well as the impact of closures on labor supply, are incorporated in the dynamic version of the model.

Social Accounting Matrix Exogenous Assumptions and Elasticities

The next table reports the macro economic version of the social accounting matrix (SAM) built to calibrate the model. Figures are for the year 1998, in billions of US dollars. The matrix is derived from the Supply and Use Table for 1998 from the Palestinian Central Bureau of Statistics. A SAM provides a tabular snapshot of the economy at one point in time. In the present case, each nonzero cell represents the value of an economic transaction between economic agents which is captured by the model. Account 1 describes the resource-use equation. In row is the demand for commodities and in column the supply. Accounts 2 and 3 are the factors of production accounts. Account 4 and 5 are the households and government account. In row are their respective incomes, and in column their disbursements. Accounts 6 and 7 are the investment – savings accounts. Account 8 and 9 capture indirect taxes respectively collected on domestic goods and imports. Account 10 finally describes the transactions between WBG and the Rest of the World: imports, exports, factor services remittances, foreign assistance and capital transfers.

Macro Economic Social Accounting Matrix, 1998 ($ billion)

	1	2	3	4	5	6	7	8	9	10
Commodities	4.9			4.01	0.98	1.5	0.17			0.73
Capital	1.6									0.1
Labor	1.95									0.72
Households		1.67	2.67							
Government		0.04		0.13				0.1	0.68	0.23
Capital account				0.19	0.11					1.37
Stocks						0.17				
Indirect taxes	0.1									
Import taxes	0.68									
Rest of the World	3.05				0.1					

Source: Authors' calculations.

The next tables report the main exogenous assumptions retained to define the different scenarios. The following assumptions are common to all scenarios:

Exogenous Assumptions	Annual Growth Rate 2000-2010
Population growth	4.60%
Working age population growth	5.30%
Exogenous technical progress	0.50%
Real public expenditures	4.60%
World price of imports	0.00%
World price of exports	0.00%
Real wage in Israel	2.00%

On the contrary, the number of workers admitted to Israel differs between the baseline scenario and the alternative scenarios:

Number of Workers in Israel	2001	2002	2003	2004 -2010
Baseline scenario	20,000	65,000	130,000	130,000
Permanent labor closure	20,000	20,000	20,000	20,000

Finally, the last table reports the elasticities used in the model:

Elasticity Description	Value
CES elasticity bet. intermediate consumption & value added, "old" capital	0
CES elasticity bet. intermediate consumption & value added, "new" capital	0.5
CES elasticity bet. labor & capital, "old" capital	0.5
CES elasticity bet. labor & capital, "new" capital	1.5
First level Armington elasticity	2
Second level Armington elasticity	5
First level CET elasticity	5
Second level CET elasticity	5
Households income elasticity (depending on products)	0.5 –1.0
Labor supply elasticity	0.3
TFP level -trade elasticity	0.1
Investment-trade elasticity	0.3
Export demand elasticity, Rest of the World	+¥
Export demand elasticity, Israel	2

Sensitivity Analysis.

Section II already highlighted the crucial impact of access to external markets outside of Israel on total export receipts within a static framework. The following analysis also illustrates how important the choice of the value of the second level CET elasticity is for the results on income growth. We repeat here Scenarios 1,2

and 4 using lower and higher values for the second level CET elasticity, respectively 2.0 and 8.0, instead of 5.0, our central value.

Undoubtedly, the degree of ease with which producers can shift their exports from Israel to the Rest of the World and vice-versa has a strong impact on income growth. As observed in the next table, a restricted access to external markets diminishes growth prospects (column 2), while the reverse enhances growth prospects (Column 3). But the general conclusions of the paper remain largely unchanged: (i) a depreciation of the real exchange rate after a closure of the Israeli labor market will not be sufficient to avoid large income losses for the Palestinian population within the next ten years; (ii). the adoption of appropriate trade and fiscal policies in this context could significantly magnify the potential impact of a real exchange rate depreciation on GDP growth; (iii) an increased access to external markets out of Israel would magnify the positive impact of these necessary reforms in case of a permanent restricted access to the Israeli labor market.

Per capita income, 2000-2010, under different second-level CET elasticities (index 2000=100).

	Year	Central Elasticity	Lower Elasticity	Upper Elasticity
	2000	100	100	100
Scenario 1	2003	106	106	107
	2010	105	101	109
Scenario 2	2003	91	88	94
	2010	95	86	102
Scenario 4	2003	96	88	102
	2010	110	92	121

Notes: Income and investment figures are in real terms. Scenario 1: progressive re-opening of the Israeli labor market. Scenario 2: permanent closure of the Israeli labor market. Scenario 4: permanent closure of the Israeli labor market, trade liberalization & VAT reform.