THE EFFECT OF PUBLIC SECTOR ON PRIVATE
JOBS: EVIDENCE FROM THE OCCUPIED WEST BANK

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Abstract

This paper estimates the short run effect of creating more public jobs on private employment in the occupied West Bank. Unlike most cited research, the results provide evidence that favors crowd in effect both at the aggregate employment level and across sectors. A main contribution of the paper is to empirically explore the underlying mechanisms that drive the results. They include increases in local demand as well as invariant increases in private wages. It turns out that increases in local labor force size is a driving factor for the latter channel. Interestingly, the increase in labor force participation exceeds the increase in public and private employment, leading to an increase in the number of unemployed. The paper also explores other mechanisms of the crowd in effect, including lack of public wage premium, lack of government capacity to absorb excess labor supply, and international cash grants.

ملخص

تقدر هذه الورقة التأثير القصير المدى لخلق المزيد من الوظائف العامة على العمالة الخاصة في الضفة الغربية المحتلة. وخلافا لمعظم البحوث التي تم الاستشهاد بها، فإن النتائج تقدم دليلا على أن الحشد يسود في الواقع على مستوى التوظيف الكلي وعبر القطاعات. ويتمثل أحد أهم مساهمات هذه الورقة في استكشاف الآليات الكامنة وراء النتائج. والتي تشمل الزيادات في الطلب المحلي فضلا عن الزيادات الثابتة في الأجور الخاصة. وتبين أن الزيادات في حجم القوى العاملة المحلية عامل مؤثر. ومن المثير للاهتمام أن الزيادة في مشاركة القوى العاملة تتجاوز الزيادة في العمالة العامة والخاصة، مما يؤدي إلى زيادة في عدد العاطلين عن العمل. وتستكشف الورقة أيضا آليات أخرى للحشد الساري، بما في ذلك نقص العلاوة العامة للأجور، والافتقار إلى القدرة الحكومية على استيعاب زيادة المعروض من العمالة، والمنح النقدية الدولية.

1. Introduction

The impact of increases in local public-sector employment on labor market outcomes has recently attracted a growing attention among economists (see for example Faggio and Overman 2014 and Jofri-Monseny *et al* 2016). One reason for the interest is that public sector generates employment for a large segment of workers. For example, in OECD countries, the share of public employment is about 21% of the total work force.[1] The share also rises in many developing countries, like Iran, Egypt, South Africa and several other MENA countries.[2] In addition, governments often utilize public sector employment to combat negative economic shocks or to reduce regional inequality (see Alsenia *et al* 2000).

So far, the empirical literature, mostly covering developed economies,[3] show mixed conclusions, differing by country, type of industries, and duration of the analysis, reflecting short run versus long run effect. Faggio and Overman (2014) use cross sectional British data and provide evidence that is consistent with their theoretical prediction.[4] In particular, they show that expanding public employment crowds in (out) jobs in the non-tradable (tradable) sector in the short run. Though, they show that the crowd out effect prevails in the long run (see also Senftleben-König 2014; Ranzani and Tuccio 2016). On the other hand, Jofri-Monseny *et al* (2016) use data from Spanish cities and find that increases in public employment crowd in private employment in the long run.[5]

1.1 Research Contribution

This paper investigates the short run effect of creating more public jobs on private employment in the occupied West Bank during the Second Intifada period (between September of 2000 and end of 2004). The paper adds several contributions to the literature. First, it re-visits the linkages between public and private employment in a context of developing economy that faces ill economic conditions.

As violence intensified during this period, Israel imposed severe mobility restrictions on goods and labor, distorting market linkages across West Bank's districts (See Cali and Miaari 2013). Israel also invoked work permits for a large section of Palestinian commuters, reducing their share, relative to total Palestinian work force, from 0.26 in 2000 to about 0.11 by end of Second Intifada in 2004.[6] With these negative shocks unemployment rate rose from about 0.12 to 0.23.[7] During this period, the share of public employment in the West Bank, relative to all waged workers, rose from 0.19 prior to the Second Intifada to 0.31 by the end of 2004. The same conclusion also holds when considering the trend for most districts (see Figure 1). Undoubtedly, the environment governing the Palestinian economy, mainly during the Second Intifada, is unique due to the constraints imposed by the Israeli occupation.[8] Still, such an environment can be utilized as a simulation to examine how excess labor supply shapes the linkages between public and private employment.

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[1] OECD (2015).

[2] https://www.ilo.org/ilostat/

[3] One exception is Ranzani and Tuccio (2016) who investigates labor market effect of public employment in three African countries (Ghana, Mali and Mozambique). They provide empirical evidence that expanding public employment crowds out (in) private jobs for skilled (unskilled) workers. However, they remained silent about the driving mechanisms.

[4] See more discussion on the theoretical work of Faggio and Overman (2014) in section 2.

[5] See Quadrini and Trigari (2008) for a macro study that explores effect of public employment on the volatility of unemployment and output.

[6] See Farsakh (2002).

[7] During the Second Intifada period, real GDP, measured in 2004 prices, dropped from $3,272 to $2,836 million and wages decreased by about 10% and The source of data for the share of commuters, wages, and unemployment rate is labor force surveys published during the Second Intifada by Palestine Census Bureau of Statistics (PCBS). The source of GDP data is PCBS's national account publications.

[8] See World Bank (2012).

The other contribution of the paper is that it empirically explores the channels of the public employment effects. So far, the literature has paid little attention to this issue. One exception is Algan *et al* (2002) who show that increases in public jobs crowd out private employment in countries with greater public substitutability between public and private sectors.[9] Their findings mostly fit cross-country analyses but may not be useful in explaining how increases in public employment influence local labor markets.[10] Senftleben-König (2014), empirically shows that increases in wages possibly explains the crowd out effect in the German tradable sector. Nonetheless, he provides no explanation of why public employment has no employment effect on the non-tradable sector, even though creating additional public employment increases wages in this sector.[11]

This paper is also the first to explain how a local labor market responds to changes in public employment in an aid-based economy. Unlike countries where expanding the public sector is financed via tax increases, the Palestinian public wage bill is largely financed by international cash grants. As explained below, this may generate different mechanisms through which public employment increases affect jobs in the private sector. In this context, the outcome of this research helps understand the local economic effects of international aid in the short run.

Drawing on district-quarter pooled data, the study shows that expanding public employment crowds in private employment. Specifically, the OLS estimates indicate that increasing public employment by an additional 100 jobs increases private employment by 71 jobs. The study also considers the endogeneity concern due to the fact that the PA utilizes public employment to curb rising local unemployment and/or as a response to population change. To address these issues, I use an instrument that utilizes district's initial share of public employment to redistribute the overall increases in public employment across districts. The IV estimates confirm the OLS findings, though the magnitude of the effect is smaller, crowding in private employment by 52 jobs. Consistent with the related studies, the paper examines the impact of increasing public employment on non-tradable versus tradable sectors. The findings, using OlS and IV models, show that expanding public employment increases jobs in both sectors. Still, the magnitude of the effect is disproportionately concentrated in the non-tradable sector.

The positive impact of public employment increases on overall private jobs and across sectors is at odds with most of the existing literature. The question then becomes what are the mechanisms that support this finding? To seek answers, I mainly base my empirical testing on the theoretical work of Faggio and Overman (2014). They suggest that the rise in income generated by the expansion of public employment increases the demand for non-tradable sector (income effect) and therefore employment in this sector expands. Still, they argue that the associated increase in local wages and prices (general equilibrium effect) may counterbalance this positive employment effect. However, their main assumption is that this offsetting factor would likely have sizable effect only in the tradable sector as its local demand is a negligible component of the national demand.

To test these theoretical predictions, I first estimate a model that links the expansion of local public employment with a change in the number of local entrepreneurs (employers and self-employed). The latter is utilized as a proxy for changes in local demand, which can be

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[9] Algan *et al* (2002) suggest that expanding public services, like transportation, education, and health, are expected to exert greater crowd out effects relative to pure collective goods, such as justice or defense.

[10] Algan *et al* (2002) also consider the impact of public rent, but their documented analysis is correlational.

[11] Jofri-Monseny *et al* (2016) set up a simulation model to explain how expanding public employment crowd in private employment in the long run. Consistent with Fagio and Overman (2014), the model predicts that creating additional public employment increases local demand for the non-tradable sector. It also predicts that household mobility limits the positive impact of local public employment on local wages. These two factors cause private employment in the non-tradable sector to increase. Nonetheless, the effect on tradable employment remains small as local demand for this sector is unaffected. Nevertheless, the authors do not subject their simulated mechanisms to empirical testing.

manifested either by expanding existing firms and/or inducing more entrepreneurs to join the market. The results, using OLS and IV models, show that the number of entrepreneurs increases both at the overall level and across sectors.

Second, I explore the impact of expanding public employment on private wages. The OLS and IV results report a negative effect but statistically insignificant. This indicates that the offsetting wage effect seems to play no role. Notably, the insignificant effect on local private wages and increases in local demand of the tradable sector justify why employment in this sector, unlike in the theoretical model, increases. To reasonably justify the insignificant effect of wages, I show that an increase in labor supply is possibly a driving factor. In other words, it is likely that in a period with ill economic conditions and excess labor supply, the increase in overall employment (public and private) enhances the probability of employment and therefore induces more individuals to join the labor market. Noticeably, the increase in labor supply exceeds that of private employment, leading to a higher level of unemployment.

Following Algan *et al* (2002), the paper also examines other channels of the public employment effect, focusing on the impact of public wage premium. They suggest that higher public wages would increase returns to seeking public employment, attracting workers out of private sector. (see also Edin and Holmlund 1997). The paper suggests that the limited capacity of the PA to absorb excess labor supply neutralizes this effect. Evidently, the empirical results show that district's changes in private employment is independent of changes in public wages. The paper further sheds light on the tax effect in which raising taxes to finance additional public jobs may decrease labor demand in the private sector. It turns out that this effect plays little role in the Palestinian case. Unlike in many countries, the Palestinian public wage bill is largely funded by international grants, among other factors.

The remainder of the paper is organized as follows: The second section explores a number of theoretical arguments regarding the relationship between public and private employment. Section three and four discuss the empirical models and the results, respectively. Section five provides evidence on the channels that explain the public employment effect. Finally, the paper briefly concludes with policy implications in section seven.

2. Impact of Public Sector on Private Employment: Overview
In the spirit of Moreitti (2010), Faggio and Overman (2014) sketch a theoretical model that links expansion in public employment to local labor market outcomes. The following is a sketch of the main arguments. Faggio and Overman (2014) assume that a each local area, in a given region, is a competitive economy and uses labor to produce nationally traded goods with prices that are exogenously determined, non-traded goods with locally determined prices, and public goods. The production in public sector is funded by national taxes and provides non-tradable services. Wages in tradable and non-tradable sectors are determined locally, while public wages are determined nationally.

The cost of labor mobility across areas is assumed to be zero and public wages are also assumed to be higher than in the private sector (tradable and non-tradable sectors). In addition, workers are assumed to either work in the private sector at a certain wage rate, or queue for public job with a given probability of unemployment. Workers are risk neutral and, with a given unemployment probability, expected wages are equalized across public and private sectors.

Labor supply is upward sloping in which elasticity positively depends on a number of factors, including degree of labor mobility across local areas and local housing supply. Expanding public employment is expected to raise income creating more jobs in the non-tradable sector. Labor demand in this sector is expected to increase further due to providing intermediate outputs to the public sector. Nonetheless, the positive employment effect may be counterbalanced by other factors. In specific, public sector may provide substitute services to

the private non-tradable sector (such as health care and education), decreasing the demand for the latter.[12] In addition, increases in the labor demand of the non-tradable sector might be offset by increases in the labor cost (labor demand effect) and non-tradable prices. To the extent that the effect of the off-setting factors is partial and that that labor supply is elastic, employment in the non-tradable sector is anticipated to increase. There are, however, three channels to fill new local jobs in the non-tradable sector: a decrease in local unemployment; reallocation of workers from the tradable sector; and workers moving from different localities.

Nonetheless, expanding public employment is expected to have no significant effect on labor demand in the tradable sector. This prediction is driven by the assumption that local demand of the tradable sector is a negligible component of the national demand. Therefore, an increase in income, at the local level, will have no effect on demand for tradable sector. On the other hand, increases in labor cost, housing prices, and other put prices in the non-tradable services would decrease employment in this sector. The extent of the crowd out effect is negatively correlated with the elasticity of labor supply.

In an earlier work, Algan *et al* (2002) emphasize private-public wage differential as another contributing factor. In particular, higher public wages, with more generous benefits, are likely to increase labor supply in the public sector and thus crowd out private employment. While not elaborated in their theoretical model, Algan *et al*.'s also argue that financing public employment via taxes may represent another contributing factor. In particular, raising taxes would possibly distort labor demand in the private sector and crowd out employment. In what follows, the empirical analysis utilizes many of the mechanisms outlined above to explain how the Palestinian private sector in the occupied West Bank responds to the expansion of public employment.

3. Data and Empirical Models

The empirical analysis draws upon quarterly labor force data in the West Bank districts covering the Second Intifada period, spanning from the third quarter of 2000 until the end of 2004. The labor force data is collected by the PCBS and contains rich data on employment and socioeconomic characteristics of individual household members. To fit the empirical analysis, the data of the variables included in the econometric models is aggregated for each district using PCBS's sampling weights. The sample excludes east Jerusalem. Except for some towns, the PA lacks sovereignty and is barred from providing public services in the city and main populous areas. This restricts the cross-sectional dimension to ten districts.

The estimation methodology builds on the work of Moritti (2010) and Faggio and Overman (2014). I first estimate a model that links the change in public employment with change in the overall private employment for all waged workers. I then use the same model to explore the differential effect on tradable sector (manufacturing) and non-tradable sector (services and construction) employment. In the following section, I explore the channels of the public employment effect by estimating another set of models. They specifically link changes in public employment to private wages as well as changes in labor force, unemployment, and number of entrepreneurs, among other models. The model of the overall private employment is specified as follows:

$$prvt_{dq} = \alpha + \beta Pub_{dq} + \Theta X_{dq} + \mu_d + \gamma_q + \varepsilon_{dq}. \qquad (1)$$

Where "$prvt_{dq}$" is the change in private employment measured as ($private_{dq}$-$private_{dq-1}$)/tot_emp_{dq-1}. The numerator measures the quarterly change (expansion) in the number of private employees for district q. To account for cross district differences in size of private employment and accordingly avoid spurious correlation, the measure is deflated by the lagged

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[12]See Algan *et al* (2002) for more discussion on the theoretical effect of substitutability between the private and public sector.

value of district's overall employment (tot_emp_{dq-1}). Private employees are defined as those working in non-agriculture firms and non-public (governmental) institutes. This measure excludes those employed in the Israeli labor market (commuters). The main independent variable (Pub_{dq}) is the change (contribution) of public employment and measured in the same fashion ($public_{dq}$-$public_{dq-1}$ /tot_emp_{dq-1}). A negative (positive) estimate of Pub_{dq} indicates that expanding public employment crowds out (in) private employment. Nonetheless, differences in district's size can be alternatively addressed via using the quarterly change in the logarithm of public and private employment (see Algan *et al* 2002 and Peri and Sparber 2008). I explored this venue and the results, unreported, remain qualitatively the same.

The vector **X** includes control variables that potentially affect private employment change. These include human capital, measured using the following labor force share categories: elementary, preparatory, secondary, and post-secondary. The effect of these variables is measured against the illiterate and literate category, representing the reference group. The control variables also account for other district characteristics, including share of population living in urban and rural areas in which the share of population living in refugee camps is the reference group. The control variables also account for the effect of age structure using share of labor force that belong to the following age categories: 21-25, 26-35, 36-45, 46-50, 50-65. The reference group is young individuals (younger than 21).

Model (1) also isolates demand effects that might be correlated with the expansion in public employment. The first is related to the impact of violence intensity during the Second Intifada. In this respect, I include district's lagged number of Palestinian fatalities in each quarter. It is expected that negative demand shocks are greater in cities with a greater level of violence (Mansour 2010). Data on number of fatalities is collected by B'Tselem, the Israeli Information Center for Human Rights in the Occupied Territories.

In addition, model (1) accounts for the effect of labor market linkages with Israel (commuting effect). Similar to the public and private employment variables, the effect is measured as the quarterly change in number of commuters deflated by the lagged value of total employment ($commut_{dq}$-$commut_{dq-1}$/tot_emp_{dq-1}). The Israeli labor market has historically absorbed a large proportion of Palestinian workers, amounting at the eve of the Second Intifada to about 0.23 of total Palestinian work force. As the Second Intifada broke out and violence intensified, Israel placed a system of internal and external closure, decreasing the share of commuters to 0.07 by the end of 2004 (See Farsakh2002).

Nonetheless, the sign of the commuting variable cannot be determined *a priori*. Prior to the Second Intifada, wages earned by commuters represent about 52%[13] of the wage bill for the total work force. Accordingly, increases in the number of commuters, is likely to raise local demand and thus increase employment. On the other hand, commuting to the Israeli labor market represents a negative supply shock to local labor markets, leading to an increase in local wages[14] and may therefore decrease employment. Importantly, to the extent that expansion in public employment correlates with commuting, not controlling for the latter would confound the effect of the former.

Model (1) also controls for district fixed effects (μ_d) to account for time invariant factors that might affect change in private sector employment, such as geography and proximity to major cities. Quarter (time) effects (γ) is also included to accounts for the time varying national shocks in private employment, including population change. The descriptive statistics and the results of the regression models are reported in the appendix.

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[13]The wage bill share is calculated as the sum of daily wages for commuters divided by total wage bill. The source of data is PCBS' labor force survey-third quarter of 2000.

[14]See Mansour (2010) and Fallah (2016).

A major concern of estimating the public employment effect is related to the possible simultaneity with private employment. As noted by Faggio and Overman (2014) and Senftleben-König (2014), the magnitude of the effect maybe underestimated if government encounters negative demand shocks by increasing public employment. On the other hand, the effect might be overestimated if public employment increases more in districts with expanding private employment. To correct for the simultaneity bias, I will re-estimate model (1) using the IV estimation approach. Consistent with Bartik (1991), Moretti (2010), and Faggio and Overman (2014), I utilize the following instrumental variable:

$$IV1 = (logpub_q - logpub_{q-1}) \times pub\_sh_{jq0} \tag{2}$$

where the first term measures the quarterly change in the logarithmic value of total public employment in West Bank. To ensure exogeneity, this term excludes the number of public employees in own district. The second term (pub_sh_{jq0}) refers to district's share of public employment measured in the initial period (first quarter of 1999). To this end, the identification assumption of this IV is that each district, in a given quarter, would receive a share of the change in public employment in proportion to its initial share. The rational of choosing this reference date that it predates the break out of the Second Intifada and the associated deterioration of the economic condition across the West Bank areas. Figure (2) depicts changes in unemployment rate across districts, which shows that the substantial increase in unemployment rate pertains only to the shocks of the Second Intifada. Therefore, using initial share of public employment as a distribution weight, allows the IV isolate correlated economic shocks at the district level.

4. Results

This section discusses the effect of the public employment contribution on the change of the overall private-waged employment. To focus on the prediction of the theoretical model, the analysis of model (1) includes only waged workers. However, the following section utilizes other types of workers (employers and self-employed) to explore the various channels of the public employment effects. The results are shown in Table (1). I first present the OLS estimates of model (1), only including the public employment variable as well as the district and quarter fixed effects (Column 1). This is to examine the extent to which the control variables confound the public employment estimate. Then the table reports the results of the base model when controlling for education and age shares (Column 2) as well as Palestinian fatalities (Column 3) and the commuting change variable (Column 4).[15]

The results show that the impact of public employment on waged-private sector employment is positive and significant at 5%. Controlling for education level, age shares, and share of urban and rural populations seem to play a minor role; the magnitude of the public employment effect changes little. Interestingly, the share of commuters to the Israeli labor market turns out to be a confounding factor, overestimating the public employment effect. In particular, the estimate drops from 0.91 to about 0.70. Controlling for the number of Palestinian fatalities, though it has a negative and significant effect at 1%, seems to have little effect on this estimate, the magnitude of the public employment effect reduces to 0.68. Overall, the public employment estimate in the preferred (base) model, as reported in Column 4, indicates that creating 100 additional public jobs would increase waged-private employment by 68 jobs, ceteris *paribus*. Commuting to the Israeli market also plays an influential role. In specific, adding 100 extra commuters would increase local waged-private employment by 60 jobs.

The estimates in Columns (5) to (8) report the findings of the IV models. The first stage estimates show that the effect of the instrument is negative and statistically significant at 1%. Similar to Faggio and Overman (2014) and Cali *et al* (2014), the negative sign of the

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[15] The estimates of the other control variables are reported in result tables in the appendix.

instrument implies that actual public employment change, at the district level, is negatively correlated with the predicted change based on the initial public employment share. The IV results, confirm the positive impact of increases in public employment, though the magnitude of the estimates is smaller. The IV estimate of the base model (Columns 8) indicates that creating 100 additional jobs increases private employment by 52 jobs, *ceteris paribus*.

4.1 Distributional effect of public employment

The theoretical model of Faggio and Overman (2014) suggests that expanding public employment has a short run asymmetric effect across sectors, crowding in (out) private employment in the non-tradable (tradable) sector. This section empirically tests these predictions. In particular, separate versions of model (1) are re-estimated for both sectors in which the dependent variable is measured in the same fashion as in model (1). To save space, I will only report the estimates of the base model.

Columns (1) and (2) in Table (2) exhibits the OLS results, which show that increasing public employment creates jobs in both sectors. Still, the results report differential effects; about 60% of the increase in the waged-private employment occurs in the non-tradable sector. Similar to the analysis of model (1), these estimates might be biased due to simultaneity concern. To address this issue, I use same instrumental variable as above. The IV findings, confirm the distribution aspect of public employment, but with lower estimates (Columns 3 and 4). This indicates that increasing public employment by 100 jobs would increase waged employment by 34 jobs in the non-tradable sector and 19 jobs in the tradable sector.

In sum, the analysis in the current and previous section provides evidence that the short run effect of expanding public employment crowds in waged- private employment at the overall level and across sectors. To my knowledge, these findings are unique. As explained above, most of existing research documents crowd out effects, either at the level of aggregate employment or at the level of tradable sector. The following section explores the basis of these results.

5. How Expanding Public Sector Increases Private Employment?

In this section, I empirically test a number of channels that explain how expanding public employment crowds in private jobs during the Second Intifada. The analysis relies heavily on the theoretical work of Faggio and Overman (2014). To reiterate, they argue that expanding public employment enhances local demand in the non-tradable sector and increases its employment. While the associated increase in wages and prices may play an off-setting factor, the increase in local demand is likely to be overwhelming. On the other hand, expanding public employment may crowd out jobs in the tradable sector. The underlying channel hinges on the assumption that local demand is a negligible component of total demand coupled with associated increase in private wages and prices. Due to data constraints, I will mainly focus on testing the effect on wages and local demand.

5.1 Crowd in effect: increasing demand in private sector

One option to estimate the impact of expanding public employment on local demand is to link the former with quarterly changes in investment or level of production. Unfortunately, these data are not available at the local level. I overcome this problem by utilizing data on the number of local entrepreneurs. The PCBS's labor force survey classifies workers according to employment status, including entrepreneurs (employers and self-employed). It is expected that an increase in the demand for local goods and service would either expand existing firms or/and induce more entrepreneurs to join the market, *ceteris paribus*.

To test this hypothesis, I estimate a model similar to model (1) above, except that the dependent variable (change in entrepreneurs) is measured as the quarterly change in number of

entrepreneurs deflated by the lagged value of total local employment. Consistent with the analysis above, the sample excludes entrepreneurs from the agricultural sector.

The results are reported in Columns (1) to (3) of Table (3), which shows that the impact is positive and statistically significant at 5%. The OLS estimates shows that expanding public employment by 100 jobs increases number of entrepreneurs by 80 (Column 1). The results are also consistent with those reported in Table (2), exhibiting a differential effect across sectors, led by the non-tradable sector with a crowd in effect of 59 jobs. The IV estimates, reported in Columns 4 to 6, go hand in hand with this finding, though they produce smaller estimates. Specifically, the total number of entrepreneurs increases by 64 (47 the non-tradable sector and 17 for the tradable sector, respectively).

The reported increase in local demand for the tradable sector contradicts with the theoretical assumption in Faggio and Overman (2014). This may indicate that the assumption that the demand for tradable sector is determined nationally may just fit advanced economies. In the Palestinian case, the size of manufacturing firms economy is relatively small; about 80% of the firms hire less than 20 workers. Lack of economies of scale may imply that shocks in local demand for the manufacturing sector is expected to be absorbed locally.

5.2 The wage effect

According to Faggio and Overman (2014), local increases in wages and non-tradable prices may off-set the positive linkage between in labor demand and expanding public employment. The following analysis empirically explores this channel, though it will be limited to the wage effect. Local data on non-tradable prices, including housing, is not readily available. The wage effect will be tested utilizing a modified version of Mincer's wage equation (Mincer 1974):

$$\log W_{ijq} = \gamma Pub_{jq} + \mathbf{B_1}\mathbf{G}_{ijq} + \mu_j + \gamma_q + e_{ijq} \tag{3}$$

where $\log W_{ijq}$ is the logarithmic daily wage[16], measured in new Israeli Shekel, for a private worker "i" , who resides in West Bank's district "j", excluding Jerusalem, and observed in quarter "q" during the Second Intifada period. The sample excludes commuters to the Israeli labor market. The main independent variable of interest is contribution of public employment (Pub_{jq}), which is measured as in model (1). The vector $\mathbf{G}_{ijq}$ controls for effect of commuting to Israeli labor market,[17] lagged number of Palestinian fatalities as well as workers' demographic and socioeconomic characteristics, including sex, education, marital status, age, and age squared. The vector also includes a list of dummy variables to account for wage differences across industries and occupations, classified at a four-digit level. The vectors "μ_j" and "γ_q" controls for district and quarter fixed effects, respectively.

Focusing on the public employment effect, the results of the wage model, whether estimated by OLS or IV techniques, are inconsistent with the theoretical predictions of Faggio and Overman (2014). The effect is negative but statistically insignificant at the conventional levels.[18] The magnitude of the OLS estimate is 0.11 with a p-value of 0.11 and the IV estimate is 0.05 with a p-value of 0.45. One concern with this finding is that the effect of public employment might be confounded by negative demand shocks during the Second Intifada. To account for this effect, I re-estimated the wage model including district's unemployment rate and lagged number of Palestinian fatalities.[19] The OLS and IV results, unreported, remain

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[16] The average wage for private sector in the beginning of the period amounted to 70.5 NIS and declined to 66 NIS by the end of the Second Intifada (2004).

[17] See Mansour (2010) and Fallah (2016) for more discussion on the effect of commuting to the Israeli labor market on wages in West Bank.

[18] One concern with the wage model is that public employment only varies across districts and time. Moulton (1990) shows that not accounting for common group errors would underestimate the standard errors. However, this issue is not a concern, since the public employment effect is insignificant.

[19] Consistent with Mansour (2014), wages are negatively correlated with rising intensity of violence.

qualitatively the same, suggesting that local private wages are insensitive to the expansion of public jobs, paving the way for local demand of tradable and non-tradable sectors to increase.

5.2.1 Linkages between wage effect and labor force

To explain the insignificant effect of public employment on private wages, I argue that the increase in the labor market participation is a driving factor. Markedly, as the economic conditions worsened during the Second Intifada, the expansion in public employment and the associated crowd in effect enhanced employment opportunity and induce many individuals to join the labor market. To this extent, with the increase in labor market entrants the effect public employment on private wages is expected to diminish.

To empirically test this hypothesis, I estimate a labor force model in which the RHS variables are the same as in model (1). The dependent variable, change in labor force, is measured as (lf_{dq}-lf_{dq-1}/tot_emp_{dq-1}).[20] To avoid direct endogeneity, workers in the public employment are purged from the labor force measure. Also, to better understand the linkages between expanding public employment and wages, the labor force measure excludes unpaid family workers, self-employed, and employer.

The OLS results are reported in Column (1) of Table (4), showing that the effect on labor supply is positive and statistically significant at 1%. In specific, increasing public employment by 100 jobs increases labor force participants by about 224 individuals.[21] Consistent with the aforementioned findings, the IV findings are similar, though the estimates are smaller (160 participants). These findings clearly indicate that the expansion in public employment substantially shifts labor supply and neutralize the positive effect on wages.

5.2.2 Does expanding public employment decrease unemployment?

So far, I provide empirical evidence that expanding public employment crowds in overall employment with differential effects across industries. But does this result suggest that unemployment will decrease? The effect depends on the extent of increase in labor force participation (Algan *et al* 2012). Specifically, for a given level of labor force, the crowd in effect implies that expanding public employment must necessarily reduce unemployment. Nevertheless, the findings in the last section show that public employment effect encourages more workers to join the labor market. As a result, unemployment is expected to increase.

To test this hypothesis, I estimate a similar model to the labor force model. The dependent variable is measured as quarterly change in unemployment, relative to lagged total employment (un_{dq}-un_{dq-1}/tot_emp_{dq-1}). The results are reported in Column (4) – (6) of Table (4). The OLS estimate of public employment is positive and significant at 1%. This indicates that expanding public employment by 100 jobs would increase the number of unemployed by about 150 individuals. The IV results produce smaller effect; about 119 unemployed individuals. To sum up, the crowd in effect of public employment has made it more appealing for individuals to join the labor market. However, the extent of crowd in effect is short of absorbing all job seekers, leading to increase unemployment.

5.3 Effect of public wage premium

According to Algan *et al.* (2002), returns to seeking public jobs increases with public wages. They suggest that, for a given level of labor supply, expanding public sector with higher wages attract workers out of the private sector and thus decrease private employment. They show that the crowd out effect applies in countries with higher public wages. To explore this venue, I

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[20]As a robustness check, I specified the dependent variable of the labor force model as difference in the logarithm of labor force. The results, unreported, remain qualitatively, the same.

[21] One concern of the labor supply results is that the increase in labor force participation may be driven by population growth. To the extent that population growth rate is common across districts, its effect will be accounted for by the quarter (time) fixed effects.

firstly estimate a Mincer (1974) wage model to unfold wage differential between public and private workers. The Mincer wage model is specified in the following fashion:

$$\log W_{ijq} = \gamma D_{jq} + \mathbf{B_1 Z}_{ijq} + \mu_j + \gamma_q + e_{ijq} \tag{4}$$

where $\log W_{ijq}$ is the logarithmic daily wage, measured in new Israeli Shekel, for worker "i", who resides in district "j" observed in quarter "q" during the Second Intifada period. The sample excludes workers from Jerusalem, Gaza strip, and those reportedly commuting to the Israeli labor market. The dummy variable "D" captures the wage differential between private and public workers (public wage premium).[22] The dummy variable takes a value of 1 for public workers and 0 for private workers and thus the effect is measured against private workers (the reference group).

The vector "Z" includes a host of control variables. To sort out differences in socioeconomic characteristics, I include gender; years of education; age; age squared; and marital status. The model also controls for job characteristics, including number of months a worker has been employed by the current employer as well as type of industry and type of occupation in which both are classified at the four-digit level. The vectors " μ_j" and "γ_q" controls for district and quarter fixed effects, respectively. The source of data is PCBS's labor force survey. The results show no evidence of wage premium; the estimate of private-public dummy variable is -0.004 but statistically insignificant (p-value = 0.75).[23] I further examined how increases in public wage affect private employment change. In this respect, I re-estimate model (1), adding district's changes in public wages. The OLS results[24] show that the effect of public wage premium is positive but statistically insignificant at the conventional level (p-value = 0.57). The results remain the same even when using the IV technique.

Furthermore, according to Algan *et al* (2002) public fringe benefits may also attract workers out of the private sector. Unlike the majority of private workers[25] in the occupied West Bank, Palestinian public workers enjoy a host of fringe benefits, such as enjoy paid vacations, pension, and health insurance. Still, the rising unemployment rate and limited capacity of the PA to absorb excess labor supply may render the channel of fringe benefit ineffective. The evidences exhibited in this section further explain why expansion in public employment has no crowd out effects.

5.4 Tax effect

According to Faggio and Overman (2014), public employment is financed by national taxation. While it did not play a major role in their theoretical model, taxes may cause a distortionary effect. Algan *et al* (2002) indicate that the underlying mechanism could channel through the decline in firms' after-tax profit, decreasing labor demand. This effect plays little role in the Palestinian case. Crippled with a weak economy, rampant tax evasion (World Bank 2007), and Israel's economic restriction, the PA has heavily relied on international aid to finance its expenditures (Sarsour *et al* 2011). During the Second Intifada period, the average annual share of grants, relative to PA's expenditures, amounted to 53%. Noticeably, the public wage bill often consumed more than two third of the national budget,[26] indicating that change of public employment is largely funded by international grants.

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[22] The average wage in the Public sector rose from 61 to 68 NIS during the study period.

[23] As for the socioeconomic effects on wages, the estimates are in accordance with the documented literature. For example, wages tend to increase with years of education. Wages also increase with age, though at a decreasing rate as captured by age squared variable.

[24] The identification assumption of the re-estimation of model (1) is that public wages are exogenous to changes in local labor market conditions as they are determined nationally.

[25] While the Palestinian labor law grants private workers many of the fringe benefits, compliance rate in the private sector is limited to about 20% of total workers (Fallah 2016).

[26] Source of data on taxes, share of wage bill, and budget is the Palestinian ministry of finance.

6. Conclusion and Policy Implications

This paper investigates the short run effect of creating more public jobs on private employment in the occupied West Bank during the Second Intifada period. It provides evidences that creating more public jobs increases overall private employment. The findings also show that private employment also increases in both the tradable and non-tradable sectors, but disproportionately favoring the latter. This conclusion is at odds with most empirical literature, which either favors the crowd out effect or limits the crowd in effect to the non-tradable sector.

A main contribution of this paper is to empirically test the channels that explain its findings. Building on the theoretical work of Faggio and Overman (2014) and Algan *et al* (2002), the paper shows that the crowd in effect is driven by the increase in local demand for tradable and non-tradable sector. It also shows that the effect on private wages, as a main off-setting factor of the crowd in effect, is offset possibly due to expansion in labor force participation. Interestingly, the increase in labor force participation exceeds the increase in public and private employment (crowd in effect), leading to increases in number of unemployed.

The paper also sheds light on other mechanisms, including public wage premium and tax effects. The results show that, holding workers' socioeconomic characteristics and type of industry and occupation constant, average public and private wages are similar. In addition, unlike in many countries, the change in public employment is primarily financed by international cash grants and thus taxes play, at best, a minor role in lowering the demand in private sector. These two factors provide further explain why we observe the documented crowd in effect.

The finding of this paper exhibits interesting policy implications. Commonly, limiting public hiring is often prescribed for developing countries to reduce fiscal stress during ill economic conditions. The findings of this research suggest that, for the labor market in the occupied West Bank, such a policy might back fire and negatively affect labor market outcomes. Put differently, with a recession and weak private sector, expanding public employment helped revive private sector and create more jobs in a labor market with excess labor supply and weak. At the Palestinian level, this research suggests that expanding public employment, mostly financed by international grants, was vital to limit the negative demand shocks during Second Intifada period. Nonetheless, a natural question is that to what extent injecting money into the private sector generates employment multiplier effect? Would it be better to focus on the private sector? I will leave this question for future research.

Reference

Algan, Y., Cahuc. P., and Zylberberg, A. (2002) "Public Employment and Labor Market Performance". Economic Policy, 34, pp. 7–65.

Alesina, A., Baqir, R., and Easterly, W. (2000) "Redistributive Public Employment". Journal of Urban Economics 48: 219–241.

Bartik, T. (1991) "Who Benefits From State and Local Economic Development Policies?" Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Cali, M. Miaari, S. and Fallah, B (2014) "Does the Wage Bill Affect Conflict? Evidence from Palestine". Working Paper.

Cali, M and Miaari, SH (2013) "The labor market impact of mobility restrictions: evidence from the West Bank". Policy Research working paper; no. WPS 6457. Washington, DC: World Bank

Edin, PA. and Holmlund, B. (1997). 'Sectoral structural change and the state of the labour market in Sweden', in H. Siebert (ed.) *Structural Change and Labour Market Flexibility*, Tübingen: Mohr, ISBN 3161468333.

Faggio, G., and Overman, H. (2012) The Effect of Public Sector Employment on Local Labor Markets. *Journal of Urban Economics,* 2014, vol. 79, issue C, pages 91-107.

Fallah, B. (2016) "The Economic Response of Rural Areas to Local Supply Shock: Evidence from Palestine. Working Paper.

Farsakh, L. (2002) "Palestinian Labor Flows to the Israeli Economy: A Finished Story.". Journal of Palestine Studies XXXII: 13–27.

Jofre-Monseny, J., Silva, JI., and Vazquez-Grenno, J. (2014) " Local labor market effects of public employment". IZA-Working Paper.

Mansour, H. (2010) "The Effects of Labor Supply Shocks on Labor Market Outcomes: Evidence from the Israeli-Palestinian Conflict". Labour Economics,17: 930-39.

Miaari, S.H., and Sauer, R.M. (2006) "The Labor Market Costs of Conflict: Closures, Foreign Workers, and Palestinian Employment and Earnings," IZA Discussion Paper no. 2282.

Mincer, J. (1974) "Schooling, Experience and Earnings". New York: Columbia University Press.

Moretti, E. (2010). Local Multipliers, *American Economic Review Papers and Proceedings*, 100 (2): 1-7.

Moulton, BR. (1990) "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units."" Review of Economics and Statistics, 72: 334-8.

OECD (2015). Government at a Glance 2015. OECD Publishing.

Quadrini, V., and Trigari, A. (2007) "Public employment and the business cycle". The Scandinavian Journal of Economics, 109: 723-742.

Ranzani, M., and Tuccio, M. (2016) "The impact of public employment on labor market performance: evidence from African countries". Applied Economics Letters DOI**:** 10.1080/13504851.2016.1184370.

Sarsour, S., Naser, R., Atallah, M. (2011) "The Economic and Social Effect of Foreign Aid in Palestine". Palestine Monetary Authority.

Senftleben-König, C (2014) "Public Sector Employment and Local Multipliers". Working Paper Series 2014-10.

World Bank (2012) "Stagnation or Revival? Palestinian Economic Prospects. Economic Monitoring Report to the Ad Hoc Liaison Committee.

World Bank (2007) "Movement and access restrictions in the West Bank: uncertainty and inefficiency in the Palestinian economy".

Figure 1: Change in Public Employment Share, Relative to Total Waged Employment, Across Districts (1999 – 2004)
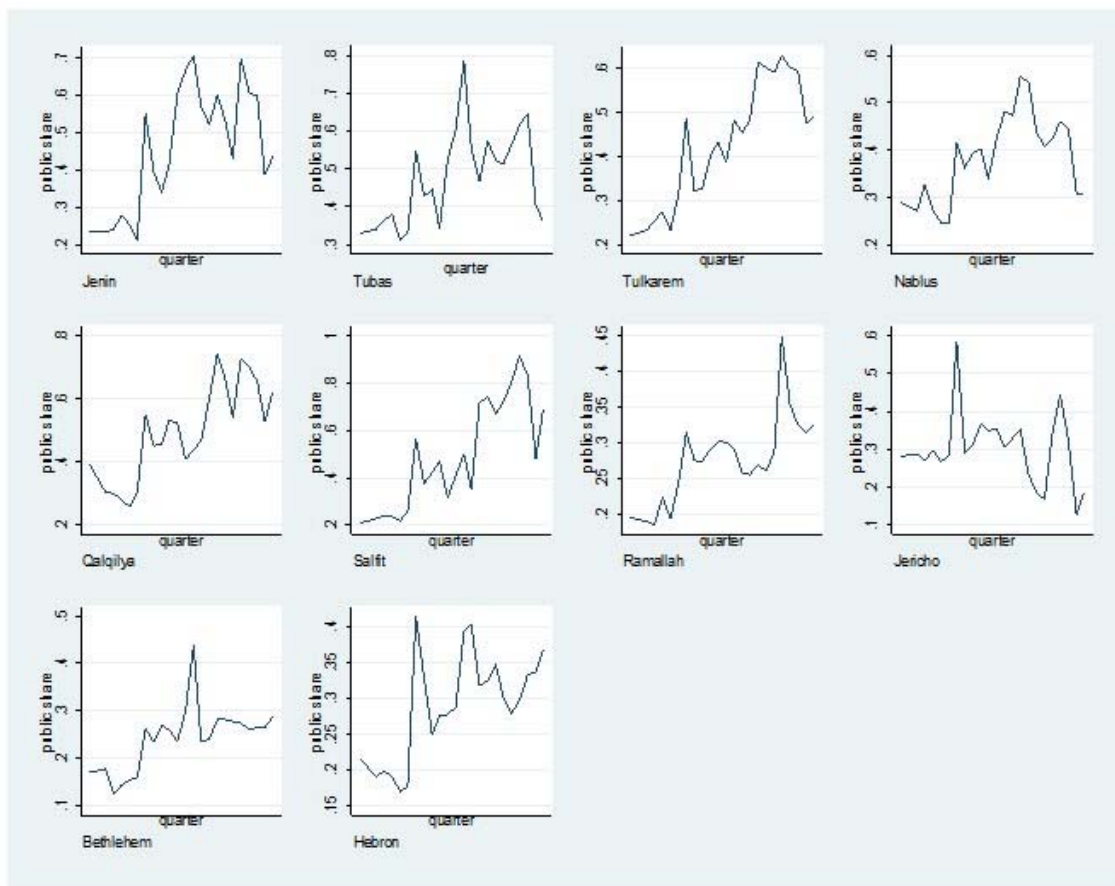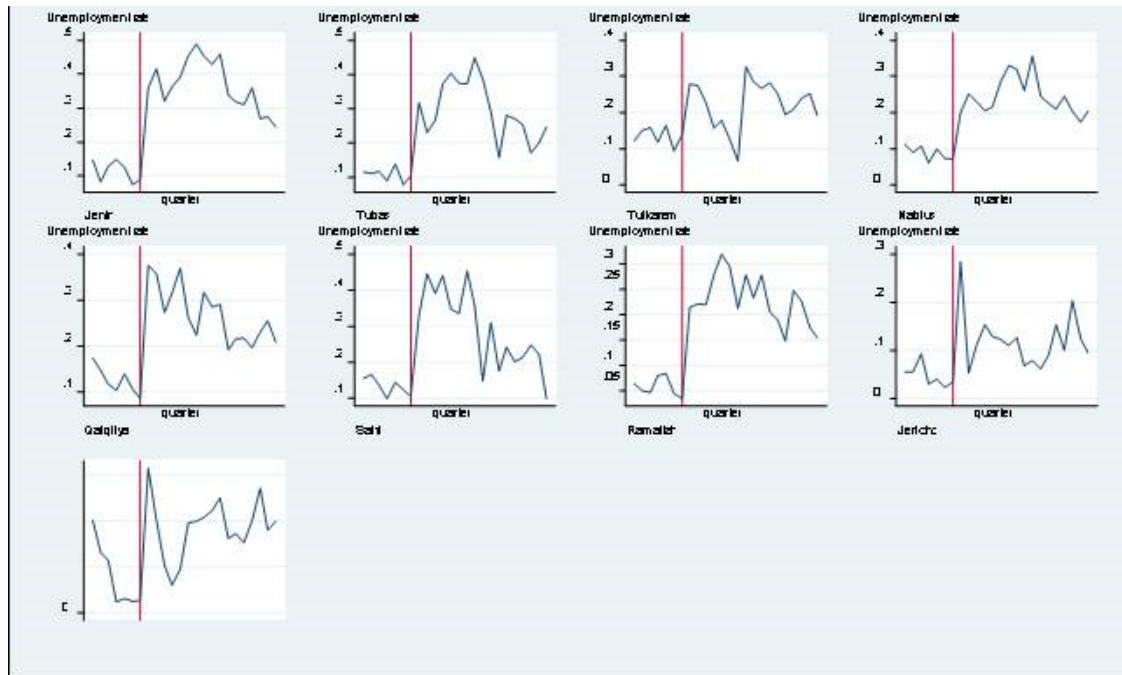
Figure 2: Unemployment Rate Across District (1999-2004)

Notes: *The reference line marks the break out of the Second Intifada.

Appendix:

Table 1: Effect of Expanding Public Employment on Waged-Private Employment

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			OLS				IV	
Public employment contribution	0.900**	0.912**	0.695**	0.675**	0.706**	0.742**	0.545**	0.525**
	(0.387)	(0.384)	(0.284)	(0.265)	(0.293)	(0.314)	(0.241)	(0.225)
Commuting contribution	No	No	0.519**	0.596**	No	No	0.579**	0.666**
			(0.166)	(0.200)			(0.209)	(0.243)
Lagged Palestiniain Fatalities	No	No		-0.002**	No	No	No	-0.002**
				(0.001)				(0.001)
Share of urban population	No	0.201	0.058	-0.093	No	0.283	0.102	-0.044
		(0.331)	(0.309)	(0.296)		(0.319)	(0.306)	(0.290)
Share of rural population	No	0.044	0.038	-0.198	No	0.120	0.094	-0.134
		(0.378)	(0.277)	(0.270)		(0.367)	(0.265)	(0.251)
Education share								
Elementary	No	-0.067	-0.295	-0.231	No	-0.145	-0.378	-0.322
		(0.645)	(0.572)	(0.603)		(0.609)	(0.550)	(0.592)
Preparatory	No	0.012	0.070	-0.001	No	0.015	0.078	0.015
		(0.470)	(0.457)	(0.463)		(0.471)	(0.454)	(0.464)
Secondary	No	0.284	0.268	0.284	No	0.250	0.242	0.255
		(0.618)	(0.582)	(0.635)		(0.608)	(0.561)	(0.623)
Graduate	No	-0.760	-0.516	-0.621	No	-0.805	-0.521	-0.627
		(0.674)	(0.695)	(0.777)		(0.670)	(0.691)	(0.770)
Age shares								
15-20	No	-0.703	-0.153	-0.362	No	-0.640	-0.043	-0.262
		(1.382)	(1.066)	(1.197)		(1.423)	(1.029)	(1.158)
21-25	No	0.122	0.502	0.261	No	0.151	0.567	0.306
		(1.440)	(1.229)	(1.246)		(1.488)	(1.203)	(1.243)
26-35	No	-0.658	-0.269	-0.354	No	-0.593	-0.176	-0.276
		(1.726)	(1.258)	(1.381)		(1.839)	(1.255)	(1.397)
36-45	No	-0.351	-0.065	-0.174	No	-0.322	-0.011	-0.149
		(1.338)	(1.120)	(1.161)		(1.403)	(1.104)	(1.172)
46-50	No	-1.831	-1.313	-1.246	No	-1.604	-1.086	-1.016
		(1.613)	(1.216)	(1.275)		(1.647)	(1.187)	(1.258)
51-65	No	-2.216	-1.713	-2.201	No	-2.264	-1.691	-2.191
		(1.969)	(1.564)	(1.634)		(2.211)	(1.651)	(1.739)
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.012	0.623	0.319	0.755	0.018	0.531	0.216	0.723
	(0.028)	(1.390)	(0.952)	(1.034)	(0.024)	(1.439)	(0.914)	(0.972)
First stage estimation								
IV estimate					-1.56***	-1.61***	-1.53***	-1.53***
					(0.00)	(0.00)	(0.00)	(0.00)
F-statistics					32.93	24.77	27.49	25.96
Observations	162	162	162	152	162	162	162	152
R-squared	0.474	0.536	0.612	0.630	0.461	0.526	0.606	0.624

Notes: Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2: The Cross-Sector Effect of Public Employment

Variables	Tradable sector (1)	Non-tradable sector (2)	Tradable sector (3)	Non-tradable sector (4)
	OLS		IV	
Public employment contribution	0.409**	0.262**	0.340**	0.192**
	(0.156)	(0.106)	(0.139)	(0.078)
Commuting contribution	0.441***	0.144	0.473***	0.177
	(0.112)	(0.090)	(0.128)	(0.116)
Lagged Palestinian Fatalities	-0.001**	-0.001	-0.001**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Share of urban population	-0.114	0.063	-0.110	0.085
	(0.181)	(0.126)	(0.174)	(0.117)
Share of rural population	-0.139	-0.040	-0.116	-0.010
	(0.163)	(0.125)	(0.156)	(0.115)
Education share				
Elementary	-0.394	0.154	-0.423	0.112
	(0.354)	(0.221)	(0.355)	(0.206)
Preparatory	-0.129	0.178	-0.103	0.185
	(0.333)	(0.174)	(0.335)	(0.178)
Secondary	-0.021	0.254	-0.039	0.240
	(0.439)	(0.208)	(0.435)	(0.202)
Graduate	-0.491	-0.107	-0.486	-0.109
	(0.566)	(0.130)	(0.565)	(0.124)
Age shares				
15-20	0.098	-0.360	0.135	-0.313
	(0.748)	(0.551)	(0.716)	(0.528)
21-25	0.688	-0.385	0.706	-0.364
	(0.819)	(0.585)	(0.805)	(0.575)
26-35	0.229	-0.466	0.258	-0.429
	(0.939)	(0.576)	(0.932)	(0.581)
36-45	0.191	-0.389	0.211	-0.378
	(0.782)	(0.555)	(0.773)	(0.558)
46-50	-0.368	-0.663	-0.254	-0.555
	(0.791)	(0.621)	(0.758)	(0.599)
51-65	-0.862	-1.037	-0.833	-1.032
	(1.080)	(0.720)	(1.104)	(0.755)
District FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Constant	0.168	0.366	0.130	0.313
	(0.761)	(0.520)	(0.732)	(0.504)
First stage estimation				
IV estimate			-1.54***	-1.53***
			(0.00)	(0.00)
F-statistics			27.55	25.69
Observations	160	152	160	152
R-squared	0.585	0.535	0.582	0.525

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Effect of Expanding Public Employment on Number of Entrepreneurs

Variables	All	Non-tradable	Tradable	All	Non-tradable	Tradable
		OLS			IV	
	(1)	(2)	(3)	(4)	(5)	(6)
Public employment contribution	0.806**	0.591***	0.234*	0.642**	0.478***	0.174**
	(0.275)	(0.174)	(0.111)	(0.198)	(0.134)	(0.077)
Commuting contribution	0.781***	0.579***	0.186*	0.858**	0.632***	0.217*
	(0.221)	(0.134)	(0.094)	(0.273)	(0.167)	(0.116)
Lagged Palestiniain Fatalities	-0.001	-0.000	-0.000	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Share of urban population	-0.217	-0.015	-0.162	-0.208	-0.009	-0.171
	(0.228)	(0.207)	(0.109)	(0.198)	(0.189)	(0.104)
Share of rural population	-0.169	0.022	-0.182*	-0.115	0.059	-0.169*
	(0.150)	(0.150)	(0.081)	(0.140)	(0.145)	(0.081)
Education share						
Elementary	0.201	0.245	-0.015	0.134	0.198	-0.044
	(0.595)	(0.444)	(0.198)	(0.564)	(0.428)	(0.178)
Preparatory	0.277	0.245	0.056	0.340	0.288	0.071
	(0.484)	(0.369)	(0.153)	(0.476)	(0.359)	(0.158)
Secondary	0.339	0.436	-0.058	0.297	0.406	-0.081
	(0.675)	(0.495)	(0.212)	(0.651)	(0.478)	(0.205)
Graduate	-0.539	-0.386	-0.122	-0.526	-0.377	-0.127
	(0.671)	(0.529)	(0.165)	(0.644)	(0.513)	(0.163)
Age shares						
15-20	-1.351	-1.063	-0.427	-1.264	-1.003	-0.364
	(1.059)	(0.795)	(0.613)	(0.980)	(0.758)	(0.567)
21-25	-1.296	-1.022	-0.380	-1.255	-0.993	-0.327
	(0.936)	(0.758)	(0.526)	(0.897)	(0.741)	(0.496)
26-35	-1.813	-1.319	-0.580	-1.746	-1.272	-0.525
	(1.157)	(0.845)	(0.571)	(1.166)	(0.856)	(0.547)
36-45	-1.437	-1.041	-0.515	-1.390	-1.008	-0.463
	(0.916)	(0.675)	(0.511)	(0.894)	(0.676)	(0.479)
46-50	-1.513	-0.909	-0.761	-1.246	-0.726	-0.634
	(1.135)	(0.894)	(0.532)	(1.067)	(0.853)	(0.502)
51-65	-3.288*	-2.656**	-0.761	-3.220*	-2.609*	-0.705
	(1.504)	(1.136)	(0.670)	(1.569)	(1.185)	(0.659)
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.784*	1.118	0.707	1.693*	1.056	0.673
	(0.797)	(0.648)	(0.442)	(0.788)	(0.663)	(0.423)
First Stage Estimation						
IV estimate				-1.54***	-1.54***	-1.51***
				(0.00)	(0.00)	(0.00)
F statistics				27.55	27.55	29.04
Observations	160	160	155	160	160	155
R-squared	0.687	0.685	0.560	0.681	0.679	0.551

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: The Effect of Expanding Public Employment on Labor Force and Unemployment

Variables	Unemployment		Labor Force Participation	
	OLS	IV	OLS	IV
	1	2	3	4
Public employment contribution	1.597***	1.287***	2.242***	1.800***
	(0.338)	(0.362)	(0.606)	(0.552)
Commuting contribution	0.258	0.403	1.847***	2.054***
	(0.312)	(0.310)	(0.476)	(0.540)
Lagged Palestinian Fatalities	-0.001	-0.001	-0.002	-0.002
	(0.002)	(0.003)	(0.002)	(0.003)
Share of urban population	0.898	0.915	0.913	0.937
	(0.699)	(0.722)	(0.831)	(0.841)
Share of rural population	0.593	0.694	0.445	0.589
	(0.615)	(0.508)	(0.571)	(0.592)
Education share				
Elementary	-0.400	-0.527	-0.694	-0.875
	(0.822)	(0.813)	(1.055)	(1.057)
Preparatory	0.588	0.707	0.605	0.775
	(0.685)	(0.593)	(0.713)	(0.698)
Secondary	0.051	-0.029	0.266	0.151
	(0.840)	(0.411)	(0.921)	(0.896)
Graduate	-1.137	-1.111	-1.762	-1.725
	(0.884)	(0.886)	(0.983)	(1.002)
Age shares				
15-20	0.701	0.866	0.500	0.735
	(2.063)	(1.242)	(2.112)	(1.950)
21-25	2.224	2.303	2.555	2.667
	(1.971)	(1.526)	(2.391)	(2.218)
26-35	0.548	0.675	0.374	0.555
	(2.298)	(1.684)	(2.611)	(2.622)
36-45	0.424	0.513	0.195	0.323
	(2.184)	(2.102)	(2.859)	(2.817)
46-50	-0.858	-0.353	-1.790	-1.071
	(2.046)	(1.727)	(2.816)	(2.753)
51-65	-1.424	-1.295	-3.293	-3.109
	(2.612)	(2.845)	(4.013)	(4.208)
Constant	-0.988	-1.164	-0.453	-0.703
	(2.163)	(1.911)	(2.563)	(2.552)
First stage estimation				
IV estimate		-1.5***		-1.5***
		(0.00)		(0.00)
F-statistics		27.32		27.32
Observations	160	160	160	160
R-squared	0.630	0.621	0.744	0.736

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table (I): Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
private employment change	620	0.028	0.215	-0.691	3.035
Public employment contribution	620	0.005	0.046	-0.195	0.461
Commuting contribution	600	0.001	0.062	-0.506	0.417
Education shares:					
Primary education	630	0.209	0.041	0.105	0.329
Elementary education	630	0.318	0.041	0.202	0.474
Secondary education	630	0.140	0.030	0.059	0.247
Post-secondary education	630	0.230	0.056	0.065	0.390
Age Shares					
21-25 years old	630	0.117	0.035	0.037	0.221
26-35 years old	630	0.166	0.022	0.095	0.229
36-45 years old	630	0.304	0.032	0.202	0.404
46-50 years old	630	0.231	0.027	0.138	0.321
50-65 years old	630	0.074	0.017	0.025	0.118
older than 65	630	0.094	0.019	0.046	0.145
Non-tradable private employment change.	569	0.006	0.055	-0.206	0.604
Service employment change	602	0.004	0.043	-0.158	0.453
Manufacturing employment change	592	0.002	0.028	-0.076	0.386
Construction employment change	569	0.001	0.023	-0.116	0.151
Entrepreneur change	603	0.009	0.093	-0.347	1.517
Service-entrepreneur change	620	0.005	0.046	-0.169	0.709
Manufacturing-entrepreneur change	610	0.002	0.023	-0.070	0.404
Construction-entrepreneur change	611	0.001	0.018	-0.055	0.187
Unemployment rate	630	0.187	0.077	0.024	0.488
Unemployment change	620	0.006	0.119	-0.436	1.346
Labor force change	602	0.015	0.181	-0.687	2.753