Economic consequences of intifada: a sequel

Econometric Institute Report EI 2007-39

Paul de Boer & Marco Missaglia

Abstract We give an assessment of the loss in the nominal gross domestic product (GDP) and nominal gross national income (GNI) due to twenty- seven months of intifada. It is based on the modest growth scenario given by the International Monetary Fund (IMF) and the World Bank (WB) in their first assessment of the economic developments in 2006 in Palestine. It turns out that the assessed loss is equivalent to the GDP of 1997 and the GNI in 1999: one year on two (and a quarter). Moreover, we show that our 2004 estimates of macro figures of 2002, based on a static computable general equilibrium model, are closer to the 2007 consensus estimates by IMF and WB than the 2003 estimates of IMF, based on an income-expenditure model. We argue that the shortening of the time horizon and the quantity adjustment following the dramatic shock explain why our model performs better.

Keywords: Macro-economic indicators, computable general equilibrium model, Palestine

Paul de Boer, Department of Econometrics, Erasmus University Rotterdam, P.O. Box 1738, NL-3000 DR Rotterdam, the Netherlands, e-mail: pmdeboer@few.eur.nl, Marco Missaglia, Dipartemento di Economia Pubblica e Territoriale, Università degli Studi di Pavia, Corso Strada Nuova 65, IT-27100 Pavia, Italy, e-mail: marco.missaglia@unipv.it

September 2007

1. Introduction

In a previous paper (Missaglia and De Boer, 2004) we simulated the impact of different foreign assistance policies on the economy of Palestine from the beginning of the second intifada, 20 September 2000, until ultimo 2002. Thereto we constructed a computable general equilibrium (CGE) model that we calibrated on the 1998 social accounting matrix (SAM) constructed by the World Bank (WB). Based on information supplied in the study WB (2003b)[1] and on information obtained from the Palestinian Central Bureau of Statistics (PCBS) we gave a shock to the model and constructed a counterfactual SAM for 2002 on which we based our policy simulations.

At the time of writing it was unknown until when the second intifada, at least from the economic point of view, would last. Moreover, we only disposed of estimates of the World Bank (WB, 2003 a, b, c) and of the International Monetary Fund (IMF, 2003) of macro figures for 2002. We were struck by the fact that there were substantial differences between these estimates and we decided to propose our own evaluation (De Boer and Missaglia, 2006). Our conclusion was that our estimates with the help of a static CGE model were remarkably close to those of IMF that based its estimates on an entirely different methodology (a macro-founded income-expenditure model). We learned from private communications that, at the time of writing the latter paper, IMF, WB and PCBS were closely working together to reach consensus estimates.

In March 2007, IMF and World Bank (IMF&WB, 2007) published a first assessment of the economic developments in 2006 of the economy of Palestine and provided the consensus estimates of the macro economic figures for 2002 using data that are more up-to-date and more complete than the data IMF disposed of in 2003.

The purpose of this note is twofold: first, we argue that from the economic point of view the end of the second intifada is ultimo 2002 and give an assessment of the loss in GDP and GNI caused by the twenty-seven months of intifada. This estimate is based on the modest growth scenario given in IMF&WB (2007). Secondly, we propose to compare our 2004 estimates (DBM, 2004) of the macro figures with those of IMF (2003), both presented in De Boer and Missaglia (2006), with the consensus estimates of IMF&WB (2007). In the appendix we derive these consensus estimates, which are likely being the definitive figures for 2002.

In section 2 we give our assessment of the economic loss due to intifada, whereas section 3 is devoted to the comparison of our estimates with those of IMF. Section 4 concludes.

2. Assessment of the economic loss due to intifada

In table 1, reproduced from table 2 of IMF&WB (2007), we give the percentage change in real gross domestic product (GDP) and in real gross national income (GNI).

Table 1 Real GDP and real GNI (percentage change)

	1999	2000	2001	2002	2003	2004	2005	2006[2]
Gross domestic product	8.9	-5.4	-15.4	-9.4	5.8	6.0	6.0	-8.0
Gross national income	8.4	-6.8	-20.1	-9.1	6.6	4.3	6.8	-7.6

The second intifada started on 20 September 2000 and it follows from table 1 that the Palestinian economy declined until 2003; whereas it experienced a recovery in 2003-2005. Consequently, from the economic point of view the second intifada runs from 20 September 2000 to ultimo 2002, the period of twenty-seven months that we studied in our previous two papers!

In table 2 we give an assessment of the loss in nominal GDP and GNI. We base our "growth scenario" on footnote 7 of IMF&WB (2007) which reads: "If the Palestinian economy had grown at a steady, but modest 3 percent each year since 1999, with a 3 percent annual GDP deflator, nominal GDP would have been more than $2 billion higher in 2006".

Table 2 Assessment of the loss in nominal GDP and GNI due to the second intifada: 20 September 2000 – ultimo 2002

	1999	2000	2001	2002	Total 2000-2002
GDP* (growth scenario)	4,517**	4,792	5,084	5,394	15,270
GDP**		4,442	3,746	3,156	11,344
Loss in GDP					3,926
GNI* (growth scenario)	5,454**	5,786	6,139	6,512	18,437
GNI**		5,276	4,193	3,546	13,013
Loss in GNI					5,424

* 3 percent real growth and 3 percent annual deflator
** Consensus estimates by PCBS, IMF and WB, table 3 of IMF&WB (2007)

In the second row we calculate the nominal GDP according to the growth scenario and in the final column we give the total over the years 2000 - 2002, arriving at 15,270 million US$. In the third row we present the consensus estimates by PCBS, IMF and WB (table 3, IMF&WB, 2007) giving rise to a total of 11,344 over 2000 - 2002. In row 4 we give the difference which is our assessment of the loss due to intifada. Its amount is 3,926 million US$, which is almost equal to the nominal GDP of 1997 that is estimated to be 4,009 million US$ by PCBS and IMF (IMF, 2003, table 2.1).

In row 5 we apply the very same scenario to nominal GNI leading to a total of 18,437 million (see the last column). In row 6 we give the consensus estimates that amount to 13,013 million US$ resulting in an assessment of the loss in nominal GNI of 5,424 million US$; which is almost equal to the GNI of 1999 of 5,454 million US$!

3. Comparison of the estimates of DBM (2004) and IMF (2003) with the consensus estimates

In table 3 we reproduce in the columns 2 and 3 the estimates of the macro figures of De Boer and Missaglia and of the IMF presented in table 2 of De Boer and Missaglia (2006), whereas the consensus estimates, derived in the appendix to this paper, are given in column 4. In column 5 and 6 we give the prediction errors (%) of DBM and IMF.

Table 3 Comparison of macro figures for 2002 (millions of US$, prices 1998) estimated by DBM (in 2004) and IMF (in 2003) with the consensus estimates of IMF&WB (2007)

1 Macro variable	2 DBM (2004)	3 IMF (2003)	4 IMF-WB (2007)	5 Prediction error (%) DBM	6 Prediction error (%) IMF
Private consumption	3,658	3,956	3,804	-3.8	4.0
Public consumption	1,130	1,041	957	18.1	8.8
Total fixed investment[3]	997	661	851	17.1	-22.4
Exports	467	426	486	-4.0	-12.4
Imports	2,831	2,896	2,733	3.6	6.0
Gross domestic product	3,421	3,188	3,362	1.7	-5.2
Net factor income	390	465	425	-8.2	9.5
Gross national income	3,811	3,653	3,787	0.6	-3.5
Private consumption plus total fixed investment	4,655	4,617	4,656	-0.0	0.1

It follows from the prediction errors that we slightly overestimated gross domestic product and gross national income, whereas IMF underestimated these figures. In absolute value our estimates are (much) closer to the consensus estimates of IMF&WB than IMF. The same conclusion holds true when we compare the prediction errors for foreign trade (exports and imports). Both DBM and IMF overestimated the public consumption, but IMF is closer to the consensus estimate than DBM. For private consumption and total fixed investment we are closer to the consensus estimates than IMF. However, as stated in our paper (De Boer and Missaglia, 2006) we have to be cautious because of the treatment of the sector “Construction” in the SAM: the whole output is classified as “investment”, while a part of it consists of “residential building”. The latter kind of investment (or at least a part of it: its annual equivalent) should be assimilated, from the point of view of its economic impact, as consumption. In the last row of table 2 we give the results for the sum of private consumption and total fixed investment. It shows that both DBM and IMF are extremely close to the consensus estimates.

4. Concluding remarks

In this note we gave an assessment of the loss in GDP and GNI caused by twenty-seven months of intifada. This estimate was based on the modest growth scenario given in IMF&WB (2007). A clearly related topic is the evaluation of the macro figures for the Palestinian economy, a politically delicate issue that gave rise to different evaluations of IMF (2003), World Bank (WB, 2003, a, b, c) and, more recently, a joint evaluation of the two organizations (IMF&WB, 2007). In this note we compared our 2004 estimates of the macro figures with those of IMF (2003), both presented in De Boer and Missaglia (2006), with the consensus estimates of IMF&WB (2007). In section 2 we showed that twenty-seven months of intifada prompted a loss in nominal GNI substantially equivalent to the

1999 GNI. It is as if the Palestinian economy completely stopped working for one year out of two (and a quarter). In section 3 we showed that our simple, static CGE model for Palestine performed better than the IMF income-expenditure model (IMF, 2003) in predicting such tremendous loss. We believe that this good predicting performance may be explained by two features of our CGE model: its simplicity – most notably its static nature – and the treatment of the labor market, in particular the theory of unemployment[4] we adopted in the model. As to the first point – the static nature of the model – one should not forget that a dramatic shock such as intifada shortens the time horizon of people. It would not make a lot of sense assuming intertemporal optimizing behavior. People reactions to similar shocks are almost by definition short run reactions. If the shock is long lasting, as it is the case with the intifada shock, this could even strengthen our point: time horizons become shorter and shorter. As to the theory of unemployment we adopted, wage rigidities in the Palestinian labor market are mainly due to the proximity with the Israeli labor market. These rigidities are not eliminated by a shock such as intifada (despite the closure policy quite a lot of Palestinians are still working "illegally" in Israel and, on top of that, each worker may always hope to be the one to whom a work permit is provided) and therefore the adjustment following a shock is a *real* (quantity) adjustment, which makes the adjustment process more unevenly distributed and thus heavier to bear.

These two points – the shortening of the time horizon and the quantity adjustment following a shock – must be included n a model whose aim is building a realistic scenario concerning the economic impact of intifada.

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Appendix: Derivation of the consensus estimates

Table Consensus estimates IMF&WB (2007) for 2002 (prices 1998, US$million)

1 Macro variable	2 1998 (US$ million)	3 1999 (%)	4 2000 (%)	5 2001 (%)	6 2002 (%)	7 Index 2002 (1998 =1)	8 2002 (prices1998, US$million)
Private consumption	4,245	8.3	-4.4	-5.4	-8.5	0.896	3,804
Public consumption	954	9.4	-11.6	-4.3	-1.6	1.003	957
Private investment	1,124	36.0	-26.5	-52.1	8.7	0.520	585
Public investment	273	25.5	-29.4	-9.9	11.1	0.887	242
Change inventories	98	62.3	-73.5	-8.9	-36.7	0.248	24
Exports	886	3.7	-6.8	-34.7	-13.0	0.549	486
Imports	3,321	19.1	-13.9	-18.1	-2.0	0.823	2,733
Gross domestic product (GDP)	4,258	8.9	-5.4	-15.4	-9.4	0.790	3,362
Net factor income	903						425
Gross national income (GNI)	5,161	8.4	-6.8	-20.1	-9.1	0.734	3,787
Net current transfers	409						1,541
Gross disposable income (GDI)	5,569	7.8	-3.5	-4.4	-3.8	0.957	5,328
GDP (sum rows 1-6 minus row 7)	4,259						3,366

In column 2 we give the macro figures of IMF for 1998 (see table 2, De Boer& Missaglia, 2006). In the columns 3-6 we reproduce the percentage change in the real values given in table 2 of IMF&WB (2007). In column 7 we give the index[5] for each variable. Multiplication of each of the figures for 1998 (column 2) by the corresponding index gives the consensus estimate for 2002 in prices 1998 given in column 8. In the row "Net factor income" we give its estimate by subtracting Gross domestic product (GDP) from Gross national income (GNI) and in the row "Net current transfers" its estimate by subtracting GNI from Gross disposable income (GDI). Since we work with percentage changes, rounded off at one decimal place, we might make rounding errors. In the last row we give the calculation of GDP by taking subtracting "Imports" (row 7) from the sum of the first six rows ("Private consumption" through "Exports"). It turns out that rounding errors are negligible.

[1] The reports of IMF&WB (2007), IMF (2003) and WB (2003a,b,c) can be found at http://people.few.eur.nl/pmdeboer/research.

[2] In January 2006 Hamas won the elections and the Palestinian Authority (PA) government, led by Hamas, was confronted with diplomatic and financial isolation by the international community, with internal tensions and with tensions with Israel. It resulted in another decline of the Palestinian economy.

[3] In table 2 we give total fixed investment which is the sum of private, public investment and change in inventories.

[4] In the model we use the unemployment theory delineated in the migration literature by Harris and Todaro (1970) to describe the wage gap between rural and urban jobs.

[5] The index of real private consumption, for instance, is equal to: (1+0.083)x(1-0.044)x(1-0.054)x (1-0.085)=0.896.