

Greece's external imbalances have been very large. Its Current Account averaged  $-12\%$  of GDP over 1999-2009, a figure that represents the largest current account deficit in the Eurozone area. Moreover, the path of deficits accelerated over the few years before the crisis, going from  $-10.7b$  EUR in 2004 to  $-23.7$  in 2006 and to  $-35.0$  in 2008. Its official (public) external debt to GDP ratio is the highest in the world. The real effective exchange rate for Greece, measured on the basis of relative unit labor costs vis avis Greece's trade partners, strengthened by about  $26\%$  over 2000-09. That is, the cost of producing a representative good in Greece relative to producing it in its trading partners increased by  $26\%$ . This development reflects to a large extent slower productivity growth and/or higher wage increases in Greece relative to the other countries.

This situation has proved unsustainable and adjustments are already taking place both directly (for instance, through mandated public salary cuts, liberalization of transportation services etc.) and indirectly (through the reduction in imports due to lower incomes). The objective of this note is to describe the basic mechanisms for external balance adjustment and to speculate on the implications of the adjustment for average Greek salaries.

What are the possible mechanisms? First, note that defaulting on foreign held debt ameliorates (by reducing interest payments to foreigners) but does not eliminate the current account imbalance because the bulk of the current account deficit is due to the trade deficit. So default cannot by itself restore external balance. The mechanism that can directly eliminate the imbalances is making Greek goods cheaper. The key question is how will Greek prices drop and by how much?

Let us address this question using a simple economic framework. In a simple model with labor as the only factor of production, Greece's international competitiveness, namely, the ratio of Greek to foreign prices,  $p/ep^*$ , is related to the ratio of Greek to foreign productivity as well as to the ratio of Greek to foreign wages. More specifically,

$$\frac{p}{ep^*} = \frac{z^*}{z} \frac{w}{ew^*} \quad (1)$$

where  $e$  is the exchange rate,  $z$  is labor productivity and  $w$  is the nominal wage. A  $\star$  denotes foreign variables.

There are three ways to decrease the price of Greek goods relative to foreign goods. a) To increase  $e$ , that is, a devaluation of the Greek currency. b) To improve Greek labor productivity (increase  $z$ ). And c) to cut Greek wages (lower  $w$ ).

The first option is not available while Greece is in the Eurozone. But even if it were available, the empirical evidence suggests that currency devaluations quickly translate into analogous increases in nominal wages and prices having a limited impact on international competitiveness. Salary cuts, on the other hand, seem to work better. For instance, in 1982, Belgium devalued its currency by about  $8\%$  while the Netherlands experienced average salary cuts of about the same amount. Macroeconomic performance Belgium showed no improvement in the short to medium term, while that in Netherlands did improve.

The second way is through productivity improvement. Admittedly, this is harder to achieve, at least in the the short to medium term. But Greece's productivity level is so low (about  $60\%$  of the US level) and its growth has been so anemic that one suspects that there is a lot of room for improvement. And that even modest reforms could go a long way in enhancing the international competitiveness of Greece.

The third channel involves a downward adjustment of Greek nominal wages. How much

would they have to drop in order to bring Greek export prices in line with those of its trade competitors? The answer depends on the type of goods exported by Greece and thus on the identity of Greece's competitors. For tourism and manufacturing, one might take Turkey as an important competitor, and perhaps also Portugal and Spain. Let us assume that the minimum adjustment would require that the prices of Greek exportables are equalized to those of its competitors. That is, the left hand side of the equation above equals one. Given existing productivity and salary differentials across the two countries, how much salaries would have to be cut in Greece?

Formula 1 requires information on labor productivity and wages in order to compute deviations from competitiveness (defined as deviations of  $\frac{p}{ep^*}$  from one). Table 1 provides information on labor productivity and two wage measures: hourly compensation costs in manufacturing and the minimum national wages.

Table 1: Productivity and Wages: Greece and rivals

	Z	MW	HC	WAmw	WAmw
Greece	31.5	631	60		
Turkey	14.6	240	-	0.22	-
Portugal	24.3	426	38	0.14	0.22
Spain	39.4	537	85	0.47	-0.11

Note: Z=Productivity, MW = Minimum Wage, HC = Hourly compensation, WAmw = Required Wage Adjustment based on minimum wages, WAcM = Required Wage Adjustment based on hourly compensation costs in manufacturing. The data on minimum wages is for 2004 is in EUR and comes from Eurostat. The data on labor productivity (GDP per hour worked) are for 2006 in USD and come from the OECD. The data on hourly compensation costs in manufacturing are for 2008 and come from the BLS (in US dollars relative to the US).

Using the values from the first three columns of Table 1 in formula 1 produces the amount of wage adjustment required to equalize exportables prices across countries. Column 4 shows that when using minimum wages in order to capture the cost of labor, Greece can achieve Turkish prices if its minimum wage were reduced by 22%. And that it would achieve Portuguese and Spanish price levels if the Greek minimum wage were cut by 14% and 47% respectively.

When using hourly costs in manufacturing, the required cut would be 22% vis a vis Portugal. Vis a vis Spain there is no competitive disadvantage.

The numbers reported here need to be taken as indicative only, as they rely on information that may not correspond well to the wages and productivity of the exportable sectors. An additional caveat is that changes in international trade competitiveness may not translate into strong and reliable changes in the foreign accounts. Nonetheless, these numbers provide reasonable guesses about the type and size of adjustments needed in order to restore the international competitiveness of the Greek economy. Interestingly, the numbers involve salary adjustments which, while large, are not huge. The fact that some wage adjustment has already taken place during 2010 and 2011 makes the task look even more manageable. These numbers also indicate that most of the damage to Greek competitiveness took place during the last few years (recall the figure reported above that Greece's relative unit labor costs vis a vis Greece's trade partners strengthened by about 26% over 2000-09).