

## Cross-Country Comparative Analysis of Enterprise Productivity in the MENA Region: An Empirical Assessment

### Prepared by:

Dr. Yousef Daoud (Birzeit University, Palestine) and Dr. Khalid Sekkat (Free University of Brussels)

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**Directed by: MAS, Palestine Economic Policy Research Institute**

### In collaboration with:

-Yousef Daoud, Birzeit University, Palestine A.

-Khalid Sekkat, Université Libre de Bruxelles, Belgium

-Isabel Sultana Cassar, EMCS, Malta

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### 1. The Issue

While SMEs were traditionally seen as crucial for employment and poverty reduction, it is increasingly recognized that they can be an important driver of R&D and growth. With fast evolving international markets, technological change and sometimes the need of customized goods and services, the flexibility of SMEs is an asset. Moreover, the internationalization of SMEs has strongly accelerated over the past three decades. They are increasingly exporting further and are involved with multinational firms in distribution, production, R&D, etc.

Evidence also shows a high correlation between the intensity of innovation in SMEs and innovation in large firms, suggesting that the importance of a country's innovative potential is independent of the size of firms, and that there is a complementarity between innovative large and small firms. The pioneering SMEs are often young start-up companies, which can be more inclined to introduce radical innovations because they do not need to be concerned with safeguarding incumbent profits, or restructuring the existing technology profiles of the company.

The above reasons make the success of SMEs a top priority in both developed and developing countries. However, the increasing globalization of the World economy is such that firms face of intense competition. To survive, they must improve their competitiveness in both domestic and foreign markets. One way of improving firm competitiveness is by increasing productivity. The general objective of the study was, therefore, to examine the status of productivity of SMEs in selected European and Southern-Mediterranean countries and to suggest recommendations for its improvement.

### 2. The Study

The study focuses on three Southern Mediterranean (Egypt, Morocco and Palestine) and three Northern (Belgium, Malta and Poland) countries using data of 15,490 firms of different sizes for two years (2004 and 2007). The countries were chosen to reflect a large dispersion of income, development, and infrastructural levels. Although firm level data in manufacturing is the unit of analysis used in this research, the structure of the selected economies varies widely. This will help to highlight the robustness (or lack of) of the relationships.

Small firms are usually defined as independent businesses managed by the owner/s which have a small market share. However, it has now become common practice to define small firms by taking statistical definitions, including the number of employees of the firm, the company's turnover, or the company's balance sheet total. In conducting the analysis, a unified measure of firm size is used based on the number of employees. We distinguish between firms with less than 10 employees, those with more than 10 but less than 200 employees and firms with more than 200 employees. This is done so as to have comparable methodology across industries and countries for all firms.

The conceptual framework is based on a Cobb-Douglas production function with constant return to scale and a technical progress which depends on various firm and industry characteristics. The latter allows explaining the potential difference in productivity between SMEs and large firms. Applying econometric techniques, we computed labor productivity and Total Factor Productivity (TFP) over sub-samples of firms of different sizes and provided a comparative analysis by firm size, industry and country as well as a study of the determinants of productivity.

The firm level data for Palestine were obtained from the Palestine Central Bureau of Statistics (PCBS) for 2004 and 2007; for Malta the data was also obtained from the National Statistical Office and completed by information from "AMADEUS".<sup>1</sup> The data for Belgium and Poland comes from "AMADEUS". The data for Egypt and Morocco come from the World Enterprise Survey of the World Bank.

### 3. The Results

For clarity, the results are organized as responses to five questions.

**The first question concerns the difference between SMEs and large firms in terms of labor productivity in general: Is the difference a general phenomenon?** The results suggest that the difference is not a general phenomenon. On average, firms with less than 10 workers are significantly less productive than firms with more than 200 workers while firms with more than 10 but less than 50 workers are significantly more productive than those with more than 200 workers. The difference is not statistically significant for firms with more than 50 and less than 200 workers.

**The second question relates to the role of industries: Does the difference between SMEs and large firms in terms of labor productivity depend on the industry?** The hypothesis that productivity is the same in large and small firms is rejected at the 1% level for Agro Industries and Metal Industries. The same hypothesis is rejected at the 10% level for Electronics, Machinery & Equipment and "Other industries". The coefficients of the firm size dummies suggest significantly higher productivity of larger firms in agro-industries, chemicals, electronics, and machinery and equipment and partly for electronics. Overall, it seems that the difference does depend on the industry. Where there is a difference, SMEs are less productive than big firms in the same industry.

**The third question is similar to the second but focuses on the country dimension: Does the difference between SMEs and large firms in terms of labor productivity depend on the country?** Given that within the same industry SMEs are sometimes less productive than big firms and that countries have different "portfolios of industries", we examine whether these translate into differing productivity levels across countries. The reported P-value of the F-statistic allows rejecting at the 10% level the null hypothesis that productivity is the same across firm size in all countries but Malta. The coefficients of the firm size dummies suggest that smaller firms are less productive in all countries but Malta and Poland. When small firms are less productive, the gap is higher in developing countries (e.g. Egypt versus Belgium).

**The fourth question combines the industry and the country's dimensions: Does the difference between SMEs and large firms in terms of labor productivity depend on the country and on the industry?** To be complete, we should address this additional question. Indeed, the fact that findings confirm that such a difference exists across sectors and that this is reflected at the country level, does not mean that the difference between the North and the South exists for all industries. In other words, there might be industries where SMEs are more productive than large firms in the South while the reverse is true in the North. This finding may have important policy implications about the type of firm (in terms of size) and which industry should be fostered in the South. The results of the F-test confirm the trends found in the previous tables: industry and country differences do exist but one cannot always say that SMEs are more or less productive than large firms for all countries. Looking at the coefficients of the size dummies across industries and countries it appears that the difference depends both on the industry and on the country. SMEs can be less productive or more productive than large firms in the same country depending on the industry. In general, however, SMEs of the three Southern countries (Egypt, Morocco, and Palestine) are less productive irrespective of the industry. In the three Northern countries, the difference might be negative or positive depending on the industry.

**Finally, the fifth question focuses of the determinants of productivity across size.** Based on the literature and given data availability, we are able to consider four determinants of productivity. These are the age of the firm, the share of exports in a firm's output, the intensity of competition in the industry and the technological intensity of the industry. Young businesses may have low levels of productivity because of the necessity to learn about technology and management. Export orientation of the firm is included and many authors observed higher productivity among exporters and pointed to the role of early foray in enabling exporting plants to have high productivity and to be large in size. The technological intensity of the industry is also considered because it may increase productivity directly and may induce adoption of new inventions and lead to better organization, management and more efficient combination of inputs. The intensity of competition in the industry may push firms to improve productivity. The age of the firm is never significant except in Morocco for firms with more than 50 workers. The coefficient is positive implying that older firms in that set are more productive than younger firms. In Palestine, the coefficients of exports orientation are significant and negative (although at the 10% level only) in firms with more than 10 and less than 200 workers. Since the Palestinian economy is under Israeli occupation with severe movement and access restrictions, exports do not play a major role for Palestinian firms. In Egypt there is no consistent pattern of the coefficient of export orientation across firm sizes. In contrast, the corresponding coefficient is consistently significant and positive across all firm sizes in Morocco. In Egypt, the coefficient of high competition is significantly positive (although at 10%) only for firms with less than 10 workers. It is not significant for other firm sizes. In Palestine, the same coefficient is significantly positive for the two lowest size classes: with less than 10 workers and with more than 10 and less than 50 workers. In Morocco, the coefficient is positive for all classes of size but significant only for the class with more than 200 workers. High competition positively and significantly affects productivity of small firms but not larger firms in Egypt and Palestine. The table also shows that for small firms, with less than 50 workers, technological intensity positively affects productivity in the three countries. It affects productivity of larger firms only in Morocco and Egypt.

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<sup>1</sup> The "AMADEUS" data bank is maintained by the firm "Bureau van Dijk" and contains comprehensive information on around 19 million companies across Europe.

#### 4. Conclusions and Recommendations

The results show that the difference in productivity between SMEs and large firms is not a general phenomenon. Rather, such a difference seems to depend on the industry. Where there is a difference, SMEs are less productive than big firms in the same industry. Combined with the fact that countries have different “portfolio of industries”, this finding implies a difference in productivity across countries. However, the fact that findings suggest that such a difference exists across sectors and that this is reflected at the country level, does imply that the difference between countries exist for all industries. Further investigations showed that the difference depends both on the industry and on the country. SMEs can be less productive or more productive than large firms in the same country depending on the industry. In spite of this, we found that SMEs of the three Southern countries (Egypt, Morocco, and Palestine) are less productive irrespective of the industry while in the three Northern countries, the difference might be negative or positive depending on the industry.

To highlight the factors behind the situation in the Southern countries, the analysis investigated the determinants of productivity by firm size in these countries. Based on the available data, we considered four determinants of productivity. These are the age of the firm, the share of exports in a firm’s output, the intensity of competition in the industry and the technological intensity of the industry. Although with some differences across the three countries, the findings showed that export orientation has a positive impact on SMEs productivity but not on large firms. A high intensity of competition has a positive effect on the productivity of all firms but the effect is much higher for SMEs. Finally, SMEs in technologically intense industry are more productive than large firms in the same industry.

The effect of the above factors is well established for firms’ productivity in general (i.e. without split by size). The novelty here is their different impact across firm size. With respect to SMEs, a number of policy recommendations emerge. First, intense competition seems to boost their productivity. Hence, enforcement of competition policy seems to be a good instrument for improving SMEs productivity. Many Southern countries have adopted a competition policy. However, its enforcement varies greatly across countries. Second, better access to high technology also affects SMEs productivity. This is especially true for capital. The cost of using capital encompasses a number of components such as getting credit, protecting investors, paying taxes, enforcing contracts etc. Comparisons with around 170 countries across the World show that in 2005 Southern countries exhibit in general disappointing records. They have, however, recently implemented a number of reforms to address the problem of access to financial resources for investments. Third, SMEs productivity improvement can also be achieved through more export orientation. Interestingly comparison with major exporters from Asia (Korea and Japan) shows that although the obstacles to exporting are higher in Southern countries, the differences are not dramatic. The problem may come from the export strategies used, which seem less active in terms of promotion, advertising, lobbying etc.

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