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## **TURKEY'S EXPORT PERFORMANCE 2: Diversification, Competitiveness and Adaptation at Sector Level**

An analysis that adjusts the export performance to external effects and focuses on the level competitiveness and adaptation will enable a better understanding of the impacts of the foreign trade policies implemented in the last decade. The first policy note of the series<sup>3</sup>, upon the analysis of Turkey's overall export performance with reference to these two factors, revealed that Turkey was less competitive but had a higher capacity of adaptation in new markets. The note also stressed that though this adaptation capacity could prevent export losses in the short term, lack of competitiveness might have negative outcomes in the longer term<sup>4</sup>. The present policy note focuses on the six sectors<sup>5</sup> (Fruit-Vegetables, Textiles, Iron-Steel, Electrical Machinery, Motor Vehicles, and Ready-made Clothing) that conduct more than half of Turkey's total exports and examines to what degree the competitiveness and adaptation performance of these distinguishes from the overall outlook.

<sup>1</sup> [http://www.tepav.org.tr/en/ekibimiz/s/1158/Umit+Ozlale\\_+PhD](http://www.tepav.org.tr/en/ekibimiz/s/1158/Umit+Ozlale_+PhD)

<sup>2</sup> <http://www.tepav.org.tr/en/ekibimiz/s/1176/H.+Ekrem+Cunedioğlu>

<sup>3</sup> Ümit Özlale and Ekrem Cunedioğlu, "Turkey's Export Performance 1: Weaker Competitiveness, Faster Adaptation", TEPAV Policy Note, March 2011.

[http://www.tepav.org.tr/upload/files/13015556054.Turkey\\_s\\_Export\\_Performance\\_1\\_Weaker\\_Competitiveness\\_Faster\\_Adaptation.pdf](http://www.tepav.org.tr/upload/files/13015556054.Turkey_s_Export_Performance_1_Weaker_Competitiveness_Faster_Adaptation.pdf)

<sup>4</sup> For a similar warning, please see: Güven Sak, "Turkey should not become like Iraq as it increases exports to Iraq", Radikal, December 17, 2010.

<http://www.radikal.com.tr/Default.aspx?aType=RadikalYazar&ArticleID=1032944&Yazar=G%DCVEN%20SAK&Date=18.12.2010&CategoryID=101>

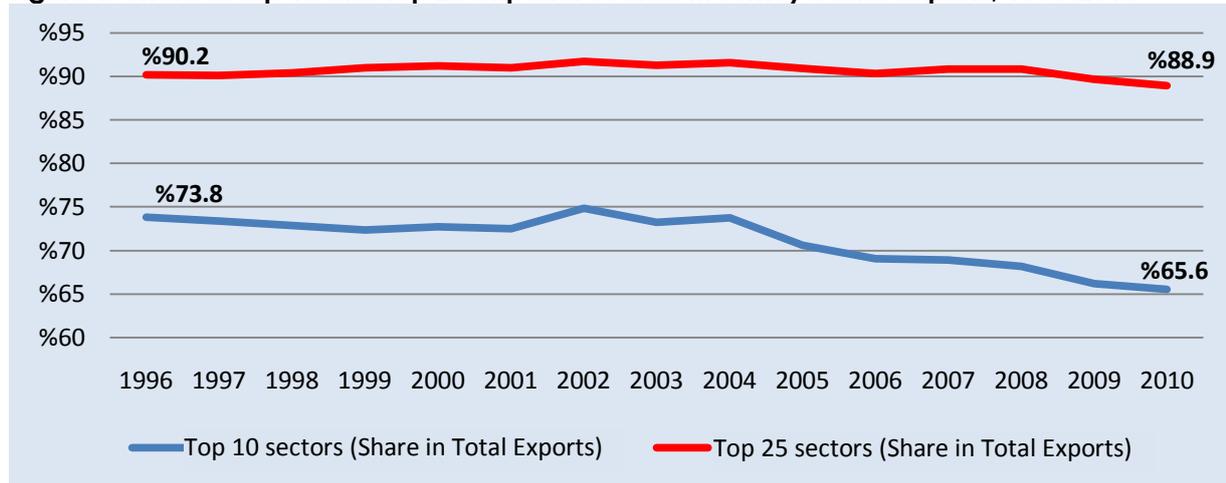
<http://www.tepav.org.tr/en/kose-yazisi/s/2165>

<sup>5</sup> As TURKSTAT data reveals, the share of top six exporter sectors at USTS Rev. 3 classification have a 51.8% share in Turkey's total exports in 2010.

### Sectoral Diversification of Exports

Figure 1 that shows the sectoral diversification of Turkey's exports reveals that the share of the top 10 export sectors<sup>6</sup> in total exports enjoyed an increased in product diversification. The share of top 10 exporter sectors in 66 sectors increased from 73.8% in 1996 to 65.6% in 2010. The share of top 25 export sectors in total exports also showed a slight decrease.

**Figure 1. Share of top 10 and top 25 exporter sectors in Turkey's total exports, 1996-2010**



Source: TURKSTAT

Another indicator to examine the changes in sectoral diversification is the number of equivalent sectors. The number of equivalent sectors<sup>7</sup> calculated using the Herfindahl-Hirschman index that measures market intensification, excludes the sectors with small contribution to exports and gives the number of the sectors that makes an equivalent contribution to total exports. In this context, the number of equivalent sectors increased from 11 in 2000 to 18 in 2009 (Figure 2).

Both methods indicate that Turkey's exports went through sectoral diversification. Sectoral diversification, which is a proper strategy to reduce the vulnerability of export performance, must be analyzed also with respect to the technology intensity of the export basket. Figure 3 points to the positive correlation between sectoral diversification and technology intensity of exports implying that the former comes along with a higher technologic intensity. This is also contributed by the diminishing share of labor-intensive sectors that used to have a considerable share in exports due to the losses in competitiveness.

Moreover, it is remarkable that the number of equivalent sectors in exports that decreased during the 2001 crisis increased after the 2008 crisis. Thus, it can be concluded that sectoral diversification was one of the underlying reasons of the improvements in adaptation capacity during the 2008 crisis.

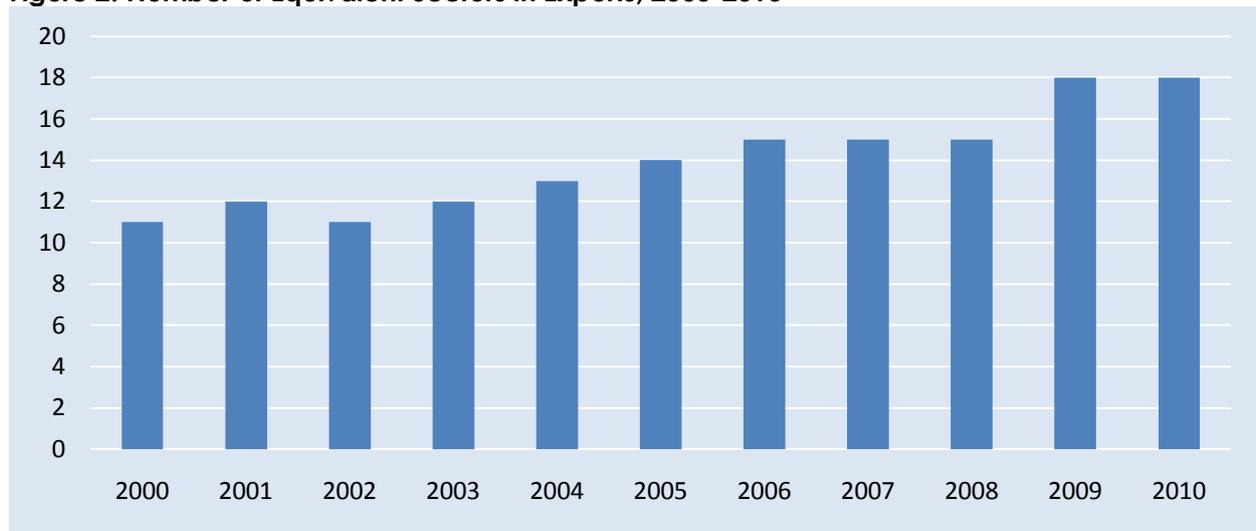
<sup>6</sup> The USTS Rev. 3 classification involves 66 sectors.

<sup>7</sup> Number of Equivalent Sectors is calculated as per the below formula:

$$ES_t = 1 / \sum_{k=1}^n \frac{X_{k,t}^2}{X_{total,t}^2} ; X_{k,t} = \text{export of the } k \text{ sector in hyear } t, X_{total,t} = \text{total exports in year } t$$

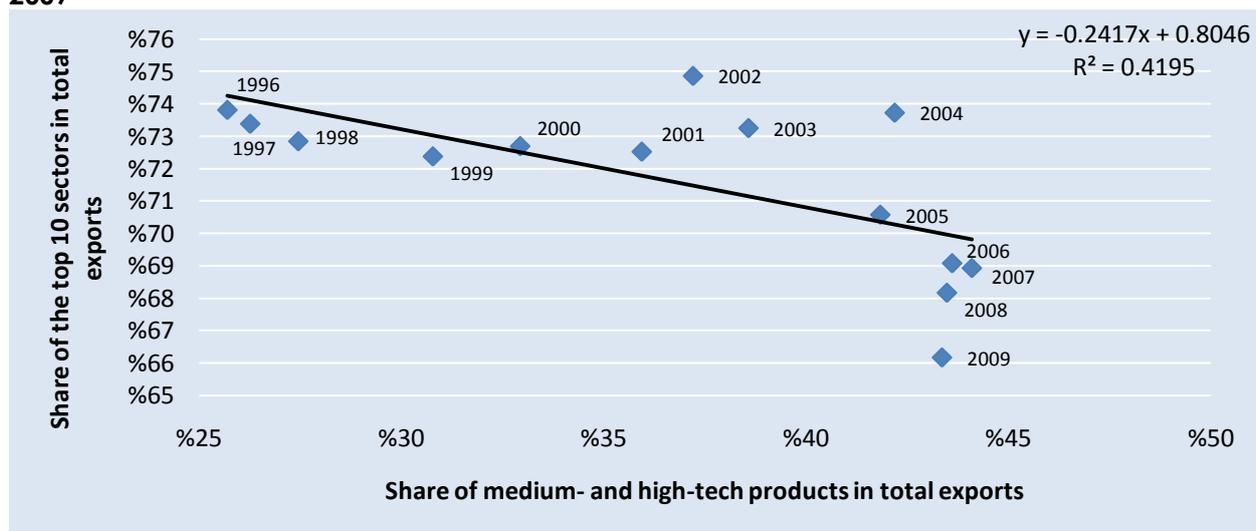
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**Figure 2. Number of Equivalent Sectors in Exports, 2000-2010**



Source: TURKSTAT

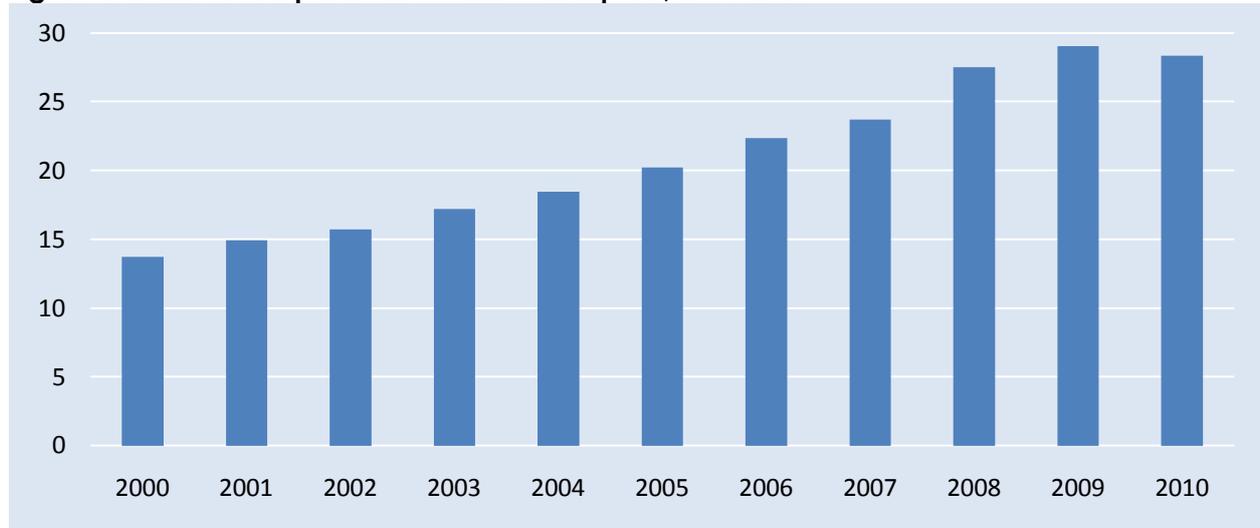
**Figure 3. Correlation between Sector Diversification and Technologic Intensity of Exports, 1996-2009**



Source: UN Comtrade Database, UNIDO, TEPAV Calculations

It might be insufficient to associate the improvements in Turkey's overall and sectoral adaptation capacity solely with sectoral diversification. Exporting to a small number of countries will automatically raise the sensitivity to the economic developments in export markets. Therefore, increasing the number of export markets taking into consideration the possible drops in import demand is of significance for the sustainability of the export performance.

**Figure 4. Number of Equivalent Countries in Exports, 2000-2010**



Source: TURKSTAT

Market diversification is observed along with sectoral diversification. Assessing market diversification on the basis of the number of export partner countries might be misleading as volume of exports to new markets might be insignificant. Thus, an analysis based on the number of equivalent countries will be more meaningful. Figure 4 shows the number of equivalent countries for exports<sup>8</sup> which shows the number of countries that are important export partners. Among 206 countries Turkey exports to, the number of countries with equivalent importance increased from 14 in 2000 to 29 in 2009. In brief, Turkey has evidently ensured a favorable diversification at both sector and market level.

The top 6 export sectors of Turkey have a 51.8 percent share in Turkey's total exports as of 2009. Therefore, although 25 sectors fulfill approximately 90% of total exports, more than half of the export volume is concentrated on 6 sectors. This note calculates the competitiveness and adaptation capacity of these 6 sectors<sup>9</sup> for the last decade.

It should be kept in mind that the competitiveness and adaptation figures the study uses are derived upon the decomposition of the elements of the change in sectoral market share. ITC (International Trade Center) methodology the study uses defines three elements for the change in the market share: competitiveness effect, adaptation effect and external effect. According to this, changes in the global market share of a sector can be explained on the basis of three main factors:

- Competitiveness: The share of the sector in export markets might have changed.
- Adaptation: The sector might have increased (decreased) exports to markets with a rising (diminishing) demand upon close monitoring of demand dynamics.
- External Factors: The weight of the existing export markets in world trade volume might have changed.

<sup>8</sup> Number of equivalent countries are (EC) calculated as per the below formula:

$$EC_t = \frac{1}{\sum_{j=1}^n \frac{X_{j,t}}{X_{total,t}}} \quad ; \quad X_{j,t} = \text{Country } j\text{'s exports in the year } t, X_{total,t} = \text{total exports in the year } t$$

<sup>9</sup> Sector level competitiveness and adaptation analysis are based on SITC Rev. 2, two-digit export data.

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One point to pay attention to when assessing the findings is that competitiveness and adaptation must be interpreted on the basis of not the figures but the ranking since the concepts find meaning according to the ranking of rival countries. Improvement (deterioration) in the ranking implies that Turkey performed better (worse) than its rivals.

**Sectoral Competitiveness**

Table 1 shows the sectoral competitiveness figures for the 2002-2009 period in two sub-periods and for the crisis period. Figures for the sub-periods reveal that severe drops in competitiveness were faced particularly in the ready-made clothing<sup>10</sup> and fruits-vegetables sectors. The losses witnessed in these two sectors stand highly above the country average. Competitiveness losses in iron-steel and motor vehicles sectors which are important export sectors for Turkey stand at relatively low levels. Over the examined period, competitiveness performance of the textiles sector did not change considerably while electrical machinery sector maintained an improvement in competitiveness.

**Table 1. Competitiveness Performance of Top 6 Exporter Sectors of Turkey**

Figures in parenthesis show the number of countries in the ranking for the respective sector.

	2000-2005		2005-2009		2007-2009	
	Competitiveness	Ranking	Competitiveness	Ranking	Competitiveness	Ranking
<b>Fruits-vegetables</b>	0,99	2 (86)	-0,72	79 (79)	0,20	6 (79)
<b>Textiles</b>	1,83	2 (86)	0,88	2 (79)	0,29	5 (79)
<b>Iron-Steel</b>	0,96	5 (85)	0,69	12 (78)	0,84	11 (78)
<b>Electrical Machinery</b>	1,59	13 (85)	1,74	6 (78)	0,47	9 (78)
<b>Motor Vehicles</b>	6,28	4 (84)	3,26	8 (78)	0,82	9 (78)
<b>Ready-made Clothing</b>	1,33	7 (85)	-1,69	76 (79)	-0,88	78 (79)

Source: UN Comtrade Database, ITC, TEPAV Calculations

In the period of global crisis, a striking improvement in the exports of fruits and vegetables and a slight drop in the competitiveness of the textiles sector were observed. In this period, other sectors did not go through a considerable change in competitiveness performance.

In short, when the electrical machinery sector is excluded, the loss of competitiveness in the top export sectors was parallel with the overall outlook in Turkey. In low-tech labor-intensive sectors, as the export good becomes less sophisticated, drops in competitiveness might lead to permanent losses in exports. The unfavorable outlook of the sectors that constitute a large proportion of Turkey's exports in the recent period must be assessed within this framework.

**Sectoral Adaptation**

Adaptation figures representing the ability to adapt to new and emerging markets are given in Table 2 for the top 6 sectors identified above. One striking point is that in the crisis period, all but ready-made clothing sector improved the ability to adapt to new

<sup>10</sup> The note abbreviated "apparel and accessories" as "ready-made clothing"; "other textiles, yarn, fabric and designing" as "textiles"; and "electrical machinery, devices and parts etc." sector as "electrical machinery".

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markets. High adaptation is remarkable particularly for the textiles and electrical machinery sectors. On the other hand, comparison of figures for 2000-2005 and 2005-2009 periods reveal a considerable improvement in adaptation of the electrical machinery and ready-made clothing sectors. Motor vehicles appear as a sector with relatively weak ability to head towards new markets especially in the 2005-2009 period. The structure of the sector and Turkey's position in the global supply chain might be the underlying reasons for weak adaptation capacity. The most important factors for high adaptation of the iron-steel sector are the dynamism of the construction sector in Turkey's surrounding region and Turkey's advantageous position for exports stemming from high logistic costs<sup>11</sup>. In the 2005-2009 period, parallel with the loss of competition, fruits-vegetables sector deteriorated in terms of adaptation to new markets.

**Table 2. Adaptation Performance of Turkey's Top 6 Exporter Sectors**

Figures in parenthesis show the number of countries in the ranking for the respective sector.

	2000-2005		2005-2009		2007-2009	
	Adaptation	Ranking	Adaptation	Ranking	Adaptation	Ranking
<b>Fruits-vegetables</b>	0,15	2 (86)	0,03	15 (79)	0,06	8 (79)
<b>Textiles</b>	-0,15	80 (86)	-0,07	75 (79)	0,02	6 (79)
<b>Iron-Steel</b>	0,66	3 (85)	1,09	2 (78)	1,04	2 (78)
<b>Electrical Machinery</b>	-0,30	69 (85)	-0,01	52 (78)	0,00	23 (78)
<b>Motor Vehicles</b>	0,49	6 (84)	-0,60	72 (78)	0,07	18 (78)
<b>Ready-made Clothing</b>	-0,02	57 (85)	0,20	6 (79)	-0,05	61 (79)

Source: UN Comtrade Database, ITC, TEPAV Calculations

## Conclusion and Evaluation

The first part of this policy note identified that Turkey's exports diversified at both sector and country level. This is of key importance in ensuring a stable export performance by reducing the impact of the shocks in external demand.

The second part carried out an analysis on the level competitiveness and adaptation of six sectors that constitute more than half of Turkey's exports after adjusting the export performance to external effects. Findings were in parallel with the overall outlook. Many sectors that lost competitiveness try to offset the loss by directing activities towards new markets. It is striking that electrical machinery and textiles sectors ensured improvements in adaptation before the global crisis. Sector characteristics directly affected the ability of adaptation, as in the case with the iron-steel and motor vehicles sectors. On the other hand, the deterioration of both competitiveness and adaptation of the exports in fruit-vegetable sector is worrisome. The export performance of the electrical machinery sector that involves white appliances can be reflected as a "success story". Finally, even though it is of importance to increase exports in new markets, it is an important matter of debate whether exporters can ensure long-term success in the new markets without improving competitiveness.

<sup>11</sup> The findings of this note are supported by the conclusions driven in TEPAV evaluation note "How does the rise in export prices affect the market share?" published in February 2011 that motor vehicles and iron-steel sub-sectors enjoyed increases in the market share despite the rises in export prices.