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EFFECT OF THE GLOBAL ECONOMIC CRISIS ON TURKISH FIRMS

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─Abstract ─

Representing the world's 15th largest GDP on a PPP basis, Turkey is regarded as both a developed, newly industrialized country and an emerging market economy. This paper examines the effects of the financial/economic crisis on Turkey and Turkish firms. Secondary research is based on literature survey of financial and economic data from journals, magazines, news articles, World Bank surveys and white papers. Primary research contrasts the power-law ranking of Turkish firms (based on the Forbes Global 2000 lists) in the pre-crisis (2007), mid-crisis (2008-09), and post-crisis (2010) periods. As a point of reference, some power law ranking plots are also presented for the same periods for US firms. Overall it is shown that Turkey has weathered the global economic/financial crisis relatively well, compared to other pan-European/Central Asian nations.

Key Words: *Global Economic Crisis, Turkish Firm Performance, Power Law Ranking of Turkish Firms*
JEL Classification: M, F, G, Z

1. INTRODUCTION

1.1. Turkey Economic Brief

Classified paradoxically as both a developed country and an emerging market economy (Country Brief, 2010), Turkey has a rapidly growing private sector although the state still plays a major role in industry, banking, transportation, and communications. Turkey's GDP in 2009 (ibid.) was $US 615.7 billion, which, on a PPP basis amounts to $US 1.04 trillion, ranked 15th in the world (World Development Indicators, 2010). Widespread economic reforms implemented in 2001 resulted in a path of industrial growth, accelerating the nation's economy. Reforms were put in place in the areas of fiscal, monetary and tax policy, product market and labor market regulation, foreign direct investment, financial markets, infrastructure and agriculture. Though agriculture accounts for roughly 35 percent of the country's employment, private industry has experienced astounding growth in recent decades (Istanbul Chamber of Commerce, 2011).

Turkey is highly integrated with the world economy, through both trade and financial channels, which made the country vulnerable to the impact of the global recession. In 2009, the economy contracted by 4.7 percent and in the first half, export revenues fell by a third. Private investment was similarly affected, falling by 33% in the first quarter of 2009, as domestic financial intermediation and capital inflows both contracted. The 2009 annual inflation rate was 6.5% (Country Brief, 2010) and unemployment exceeded 16 percent in the first quarter of 2009, with more than one in four workers aged 25 and under, unemployed.

However, Turkey's economy has since recovered, with growth predicted at 6-7 percent for 2010 (Global Economic Prospects, 2010; Country Brief, 2010). In May-July 2010 unemployment fell to 10.5% compared to 13% in the same period of 2009 and 11% in April 2010.The World Bank notes that a diversified economy, proximity to Europe and integration with markets, being an external anchor of EU accession, and a lengthy track record of sound economic management & structural reform are the drivers of Turkey's long-run prospects (ibid.).

1.2. World Bank Financial Crisis Surveys

The World Bank conducted three rounds of Enterprise/Financial Crisis Surveys in six countries, via telephone interviews, to measure the effects of the financial crisis on private, non-agriculture sector firms. The results are compared to those from a baseline study - the Enterprise Surveys (ES), conducted in Eastern Europe and Central Asia in 2008 and 2009, respectively. The 2008 ES surveys for Eastern Europe targeted 2,499 firms and featured information from fiscal year 2007, reflecting a pre-crisis status (Ramalho et. al., 2009). A total of 52 indicators were developed to measure the effects of the crisis on key elements of the private economy: sales, employment, finances, research and development, and expectations about the future. The first Financial Crisis Survey (FCS) was conducted in six countries – Bulgaria, Hungary, Latvia, Lithuania, Romania and Turkey, in June / July of 2009. This was followed by a 2nd round in February and

March 2010, that covered 1,892 enterprises in seven countries including the six above and Kazakhstan (Correa et.al., 2010). The 3rd round of FCS's, conducted in June / July 2010, involved contacting the original 2,499 ES firms, to determine, among other things, which of the firms were still in existence following the financial crisis. Additionally, a short survey was administered to a subset of the original population of 2,499 firms (Ramalho et.al., 2009). Based on the data, firm exit rates were computed. Thus the World Bank data provide a nice snapshot of the economic and financial outlook of Turkish (and select other countries) prior to, during and following the 2007-2009 global economic/financial crisis

1.3. Utility of the Power Law to Study the Dynamics of Industry Evolution

The regularity or 'law' that describes phenomena in which large occurrences are extremely rare but small ones are very common, resulting in a sharply 'right skewed' or long right tail distribution, is often referred to as a Power Law. Cumulative distribution functions with a power law form are sometimes referred to as rank/frequency plots, and as Zipf plots or Pareto plots, after the two pioneering researchers who popularized them (Newman, 2006).

Power Law plots depicting ranking behavior of firms within an industry or economy at different points in time can serve as a useful visual tool to explore industry/economy dynamics. An Industry Life Cycle starts with introduction and growth phases and then transitions into maturity and onward to eventual decline. Six forces affect the intensity of competition within an industry and play into the dynamics of its evolution, namely - the threat of potential entrants, bargaining power of suppliers, bargaining power of buyers, threat of substitute products, rivalry among existing firms and the power of other stakeholders including governments, local communities, non-government organizations and other task-environment groups (Porter, 1980, Wheelen and Hunger, 2010, p. 110).

As an industry grows it attracts new competitors. In a fragmented industry no firm has a large market share and each only serves a small portion of the market. With time, companies use the experience curve and economies of scale to reduce costs faster than their competitors. Firms typically integrate further to reduce costs, while focusing on product differentiation. By the time the industry matures, it has consolidated, dominated by a few large firms (ibid, p. 114). In today's turbulent and globalized economy, major crises and global downturns are increasingly frequent and produce major shakeouts. However, an underlying structural trend exists, namely, the increasing inequality in the size and performance of large companies (Zanini, 2008). Power Law plots capture this, providing a visual depiction of the relative ranking of competition at a given point in time. Comparison of power law plots over time can therefore help to assess underlying structural changes (ibid.). In this paper, power law plots are developed for leading Turkish firms (across industries) before, during and after the 2007-2009 global recession, to explore the effects of the crisis on Turkish firms.

2. RESULTS

2.1. Financial Crisis Surveys – Key Findings

The number of firms surveyed in each of the three rounds of FCS's in six countries is shown in Table 1. All the firms had previously been surveyed via the base Enterprise Survey (Round 1) in 2008 that focused on pre-crisis (2007) data (Ramalho et.al., 2009). In most countries, the firms surveyed included small, medium and large enterprises from retail, manufacturing and services sectors, as shown in Table 2, featuring the second round of FCS's. However, unlike the other countries, Turkish firms hailed largely from the manufacturing sector (Table 2). Space restrictions prohibit a detailed tabulation of data on all indicators across the six/seven countries, and the reader is referred to the original literature (Ramalho et.al., 2009; Correa et.al., 2010, and www.enterprisesurveys.org/financialcrisis). Survey results for Turkey and select neighbors in Eastern Europe - Bulgaria and Romania, along several key indicators, are presented in Table 3.

Table 1: FCS's - Numbers of Firms Surveyed in Various Countries*

Survey ID	Period of Survey	Bulgaria	Hungary	Latvia	Lithuania	Romania	Turkey
Round 1	June – July 2009	150	187	226	239	370	514
Round 2	February-March 2010	152	152	221	224	304	606
Round 3	June – July 2010	152	151	206	217	303	364

* Kazakhstan was only surveyed in Round 2. Source: www.enterprisesurveys.org

Table 2: Breakdown of Firms Surveyed in Round Two by Firm Size and Industry

	Composition by Size (%)				Composition by Industry (%)		
Country	Total	Small (<20)	Medium (20-99)	Large(100 or more)	Manufact-uring	Retail	Other Services
Bulgaria	152	47	33	20	35	32	34
Hungary	152	34	26	39	39	22	39
Kazakh-stan	233	27	40	33	35	31	34
Latvia	221	36	33	32	36	33	31
Lithua-nia	224	41	32	28	38	27	35
Romania	304	30	37	34	40	23	37
Turkey	606	32	38	29	80	10	11

Source: Correa et.al., 2010.

Overall, the results in Table 3 indicate that Turkish firms have weathered the crisis better than some neighboring countries, and are more optimistic about the economic future. For instance, significantly more Turkish firms expected to increase R&D spending (50.7%) compared to Bulgaria (20.1%) or Romania (16.9%). Percentage of Turkish firms surveyed that increased the number of permanent workers was 37.8% compared to 18.4% for Bulgaria and 29.7% for Romania. Percentage of firms surveyed in June/July 2010 that expected sales increases in the next year were 56.9% for Turkey versus 38.1% for Bulgaria and 30.4% for Romania. Even on the negative side, Turkish firms came out less negative - for instance, only 10.5% of Turkish firms felt that the situation had worsened (in July 2010) compared to six months ago, whereas the percentage was much higher - 28.7 for Bulgaria and 43.5 for Romania.

Table 3: Financial Crisis Survey (FCS) Indicators for Bulgaria, Romania, Turkey

Indicator	Bulgaria	Romania	Turkey
% of firms that closed	1.0	8.8	0.3
% of firms that closed + insolvent in FCS + impossible to locate	32.4	25.2	11.2
% of firms with increased sales – May ’10 vs’09	11.4	13.4	35.3
% of firms with decreased sales –May ’10 vs ’09	62.4	75.5	37.7
% of firms using less capacity – May’10 vs FY07	80.4	72.0	59.8
% of firms that increased number of temporary workers- May’10 vs FY07	1.8	5.1	25.5
% of firms that decreased number of temporary workers- May’10 vs FY07	8.4	15.5	12.9
% of firms that increased number of permanent workers-	18.4	29.7	37.8

May'10 vs FY07			
% of firms that decreased number of permanent workers- May'10 vs FY07	65.5	59.7	51.3
% of firms that expect sales to increase 5/10-5/11	38.1	30.4	56.9
% of firms that expect sales to decrease 5/10-5/11	19.4	41.7	16.5
% of firms that expect to increase R&D spending 5/10-5/11	20.1	16.9	50.7
% of firms that expect to increase # of FT employees 5/10-5/11	14.9	15.3	34.6
% of firms that expect to reduce number of FT employees 5/10-5/11	18.3	15.9	7.9
% of firms that increased R&D spending in 5/09 -5/10, compared to that in 2008	9.4	17.9	25.1
% of firms that decreased R&D spending in 5/09-5/10, compared to that in 2008	18.4	22.1	20.5
% of firms insolvent or filed for bankruptcy within the last three months (March-May 2010)	19.2	0.3	4.1
% of firms overdue on financial obligations in the last three months (March-May 2010)	23.5	27.5	8.5
% of working capital financed internally	83.6	78.9	64.7
% of working capital financed from banks	10.7	13.0	17.1
% of firms overall situation improved compared to 6 months ago	23.3	18.4	35.2
% of firms overall situation worsened compared to 6 months ago	28.7	43.5	10.5
% of firms overall situation remained the same compared to 6 months ago	48.0	38.2	54.3

2.2. Power Law Results:

The Forbes Global 2000 rankings are a weighted average based on sales, assets, profits and market value. For 2007-2010 they include some 10-12 Turkish firms (Table 4). For the Power Law plots, total sales was picked as the best indicator of consumer demand and was ranked in Figures 1&2, for Turkey and the US, for 2007, 2008 & 2010 (pre-crisis, during crisis, and post-crisis), respectively.

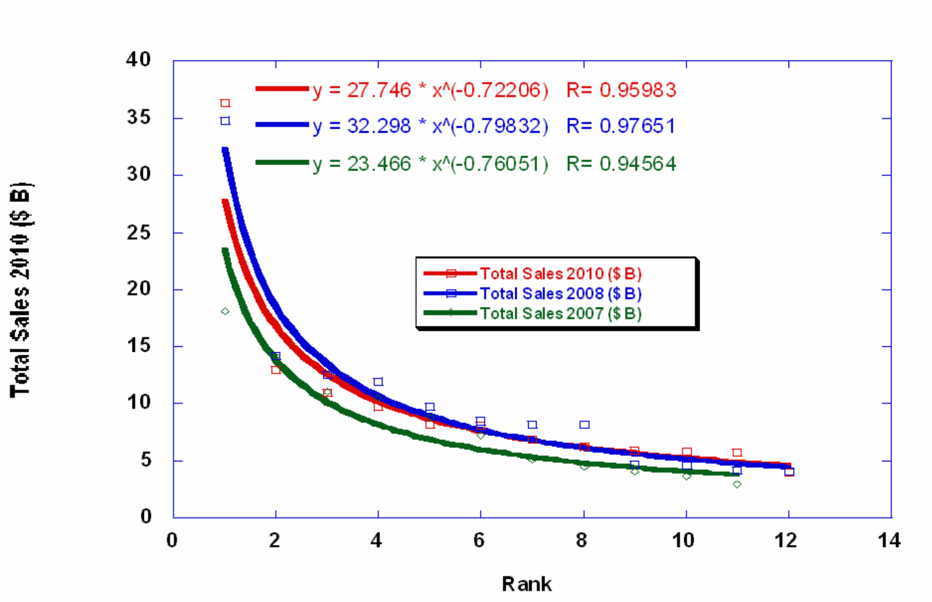
Table 4: Ranking of Turkish Top Ten Firms by Total Sales: 2007, 2008 and 2010.

Year	Firm	Industry	Sales ($ B)	Profits ($B)	Assets ($B)	Market Value ($B)	Top Ten Rank Sales
	Koc Group	Conglomerate	18.05	0.44	26.65	5.5	1
	Turkiye Is Bankasi	Banking	14.12	1.13	52.86	11.97	2
	Tupras Turkiye Patrol	Oil & Gas	11.02	0.49	4.25	4.82	3

2007	Sabanci Group	Conglomerate	10.54	0.51	45.48	7.25	4
	Petrol Ofisi	Oil & Gas	8.77	0.16	3.49	1.73	5
	Dogan Holding	Diversified. Financials.	7.26	0.47	5.84	2.43	6
	Akbank	Banking	5.1	1.09	40.9	15.78	7
	Turkcell	Telecomm. Services.	4.45	0.79	5.09	11.12	8
	Turkiye Garanti Bankasi	Banking	4.13	0.52	30.47	8.02	9
	Turkiye Vakiflar	Banking	3.72	0.44	24.91	6.12	10
2008	Koc Group	Conglomerate	34.84	0.4	40.12	6.69	1
	Tupras Turkiye Patrol	Oil & Gas	14.19	0.58	4.93	6.48	2
	Turkiye Is Bankasi	Banking	12.53	1.26	61.19	12.89	3
	Sabanci Group	Conglomerate	11.95	0.35	47.6	8.27	4
	Petrol Ofisi	Oil & Gas	9.66	0.16	4.25	2.36	5
	Dogan Holding	Diversified. Financials.	8.5	0.63	5.5	1.92	6
	Akbank	Banking	8.17	1.56	61.54	16.26	7
	Turkiye Garanti Bankasi	Banking	8.13	1.85	65.48	12.69	8
	Turkcell	Telecomm. Services.	4.75	0.9	5.95	22.03	9
	Ford Otomotiv Sanayii	Consumer Durables	4.6	0.35	1.98	3.37	10
2010	Koc Holding	Conglomerate	36.34	1.32	41.8	7.45	1
	Sabanci Group	Conglomerate	12.93	0.78	65.24	7.33	2
	Turkiye Is Bankasi	Banking	10.97	1.61	86.34	12.6	3
	Turkiye Garanti	Banking	9.75	2.06	77.02	16.06	4
	Dogan Holding	Diversified. Financials.	8.17	0.05	6.8	1.68	5
	Akbank	Banking	8.06	1.16	60.23	15.75	6
	Turk Telecom	Telecomm. Services.	6.82	1.18	8.97	11.25	7
	Turkiye Vakiflar	Banking	6.25	0.81	35.48	5.93	8
	Turkcell	Telecomm. Services.	5.89	1.35	8	13.19	9
	Enka	Construction	5.87	0.5	7.63	7.29	10

Source: Forbes Global 2000 Lists - 2007, 2008 and 2010

Figure 1: Power Law Plots of Total Sales of the Top Twelve Turkish Firms in Forbes Global 2000 Lists in 2007, 2008 and 2010.



3. DISCUSSION AND CONCLUSIONS

The economic/financial crisis was triggered by the US sub-prime mortgage meltdown and financial markets debacle. It then evolved rapidly into a worldwide economic recession, fueled by globalization, world-wide macro economic imbalances and structural financial system weaknesses compounded by increased financial innovation (and risk), inflated asset prices, excessive liquidity and loosely regulated monetary policy. To curb the meltdown, governments focused on five strategic measures: (1) providing emergency liquidity support (2) expanding financial safety nets (3) interventions and capital injections into large financial institutions (4) problem asset restructuring (eg. TARP) and (5) measures to jump start lending. Policy measures adopted by countries to deal with the economic/financial crisis are shown in Table 5. Turkey employed a combination of emerging liquidity support including maturity extension, increased deposit insurance coverage and measures to kick start lending, including access to credit. These measures appear to have controlled the crisis relatively well. For instance, average permanent employment in Turkey was up in February 2010 compared to

Figure 2: Power Law Plots of Total Sales of the Top Twelve US Firms in Forbes Global 2000 Lists in 2007, 2008 and 2010

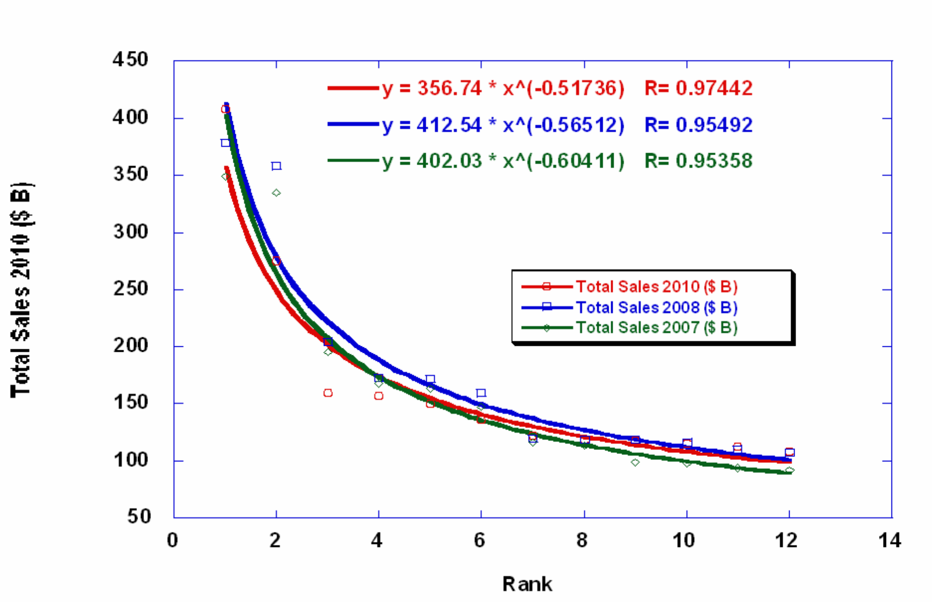


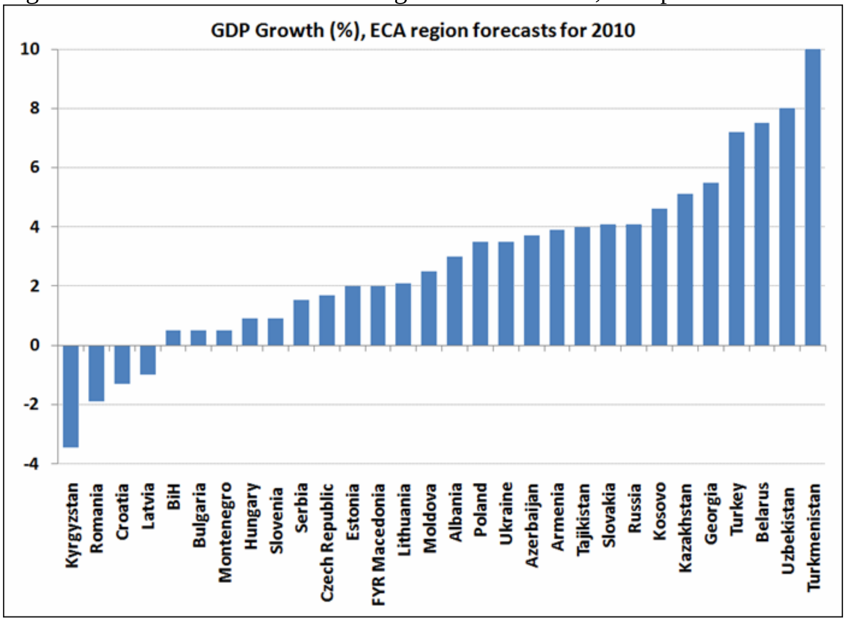
Table 5: Crisis- Containment Policy Measures in Select Countries as of April 2009

Country	Emerging Liquidity Support	Increased Deposit Insurance Coverage	Guarantees on Bank Debt	Capital Support	Troubled Asset Purchases/ Guarantees	Measures to Kick-start Lending
USA	X	X	X	X	X	X
China	X			X		X
Korea, Rep. of	X	X	X	X	X	X
Malaysia	X	X				X
Bulgaria	X	X				
Romania	X	X				
Turkey	X	X				X
Russian Federation	X	X	X	X	X	X
Argentina	X					X
Brazil	X					X
Kuwait	X	X	X		X	X
Saudi Arabia	X	X	X	X		X
India	X			X		X
Nigeria	X					

Source: The World Bank Group. IFC. “Dealing with the Crisis”, June 2009, p.5

June 2009, 56% of manufacturing and service firms had applied for loans or lines of credit between mid-2009 and mid-2010 and 50% of firms in 2010 were optimistic about future R&D spending (Correa et al., 2010). Almost 20% of small, and more than 50% of large Turkish firms surveyed in Feb/March 2010 reported that the business and economic outlook had improved over the past six months (ibid.). This sentiment is echoed by World Bank GDP growth forecasts for 2010. As shown in Figure 3, Turkey's GDP growth rate for 2010 was estimated at ~ 7.2%, leading most countries in Europe and Central Asia (ECA), and lagging only behind Belarus, Uzbekistan and Turkmenistan. In contrast, the estimated 2010 GDP growth rate for USA was only 2.7% (CIA World Factbook, 2010).

Figure 3: 2010 Forecast for Percentage Growth in GDP, Europe and Central Asia (ECA) Countries.



Source: World Bank Data for Europe and Central Asia, Oct. 2010; cited in Schrader & Daly, 2010

Examining the data (Table 4) underlying the power law plot of Figure 1, certain firms/industries appear to have weathered the crisis a little better than certain others. For instance the Koc group (conglomerate) has maintained the top position over all firms/industries, in 2007, 2008 and 2010. Similarly Turkiye Is Bankasi (Banking) ranked no. 2 in 2007 and no. 3 in both 2008 and 2010. An interesting finding, however, is that the Oil & Gas giants such as Tupras Turkiye Petrol and Petrol Ofisi featured in the top 5 in both 2007 and 2008 but did not even make the top ten in 2010. This presents a question as to whether the relative decline in the sales of the top oil and gas top firms is unique to Turkey or whether it is common to other countries, which would suggest that the entire oil and gas industry worldwide may have suffered seriously over the period of the global economic crisis. To explore this question further, the Forbes Global 2000 list data underlying the plots (Figure 2) for the US top firms sales for 2007, 2008 and 2010 were examined. Owing to space restrictions the data are not presented here, however Exxon Mobil was ranked no. 2 in 2007, dropped to no. 4 in 2008 and recovered to no. 2 in 2010. Chevron was ranked no. 3 consistently in 2007, 2008 and 2010. Conoco Phillips was ranked no. 4 in 2007, no.5 in 2008 and no.6 in 2010. Thus the (limited) data seem to imply that the oil and gas firms relative rankings appear to have suffered in Turkey but not necessarily in other countries such as the US, despite the BP Gulf Coast crisis. It is not clear why this is so.

Future work aims to develop Power Law plots for select other countries in different regions, some developed and some developing, in order to arrive at more general conclusions as to worldwide impact on certain industries. It is further proposed to construct such plots using other ranking variables such as market share/total assets/profits, and furthermore, to isolate firms by industry rather than to rank them across industries.

BIBLIOGRAPHY

Adamic, L.A. (2000, October 4). *Zipf, Power-laws and Pareto – a ranking tutorial*, Information Dynamics Lab, Hewlett Packard Labs.: Palo Alto , CA., http://www.hpl.hp.com/research/idl/papers/ranking [Accessed 7.5.2009].

Adamic, L.A. and B.A. Huberman (2002), "Zipf's Law and the Internet". *Glottometrics,* Vol.3, pp. 143-150.

Correa, P., M. Lootty, R. Ramalho, J. Rodriguez-Meza, and J. Yang (2010). "How Firms in Eastern and Central Europe are Performing in the Post-Financial Crisis World". *Enterprise Note No. 18*, Enterprise Analysis Unit.
Country Brief: Turkey (October 5 2010), The World Bank.
Forbes Global 2000 Top Ten Lists, 2007, 2008 and 2010.

Global Economic Prospects (Summer 2010). Regional Appendix: Europe and Central Asia, The World Bank.

Istanbul Chamber of Commerce (2011): *Macroeconomic Indicators*, http://www.us-istanbul.com/economies.php?c=turkey&p=macroeconomic-indicators, [8.12.2010].

Newman, M.E.J. (2006, May 29), *Power Laws, Pareto's Distributions and Zipf's Law*, http://arxiv.org/PS_cache/cond-mat/pdf/0412/0412004v3.pdf, [Accessed 12.9.2009].

Porter, M. E. (1980), Competitive Strategy, New York: The Free Press, pp. 3-29.

Ramalho, R., Rodrigez-Meza, J. and Yang, J. (2009). "How are Firms in Eastern and Central Europe Reacting to the Financial Crisis?", *Enterprise Note No. 8*, Enterprise Analysis Unit.

Schrader, K. and Daly, J. (2010, October 8). "Growth Returning to Emerging Europe And Central Asia, But Concerns Center on Jobless Recovery", The World Bank, Press Release No: 2011/127/ECA.

The World Bank Group. (2009, June) "Dealing with the Crisis", p.5.

The World Factbook (2010). Central Intelligence Agency (CIA). Country comparisons by GDP Growth on an Annual Basis Adjusted for Inflation.

Wheelen, T.L. and J.D. Hunger (2010), Strategic Management and Business Policy: Achieving Sustainability, NJ: Pearson- Prentice Hall, 12th Edition.

World Development Indicators Database, (December 15, 2010), The World Bank.

Zanini, M. (2008, November). *Using 'power curves' to assess industry dynamics*, The McKinsey Quarterly, http://www. mckinseyquarterly.com , [Accessed 18.12. 2008].