

## OCCASIONAL MACRO NOTE

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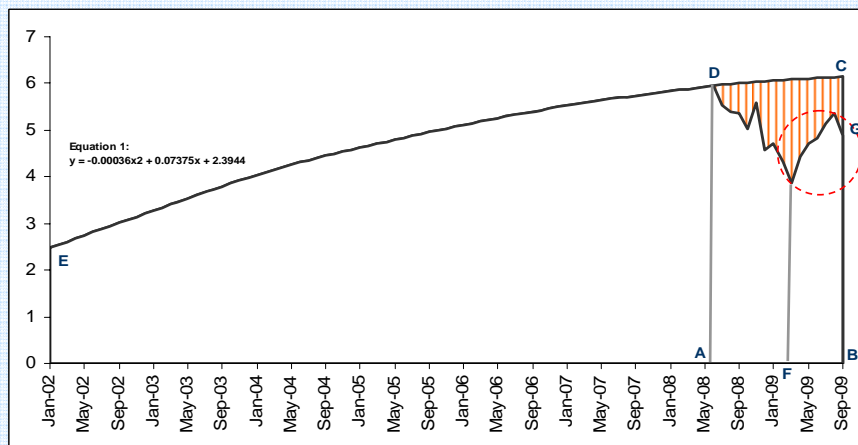
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## For All IP Sectors, the Light is Visible at End of the Tunnel. Who Will See the Day Light and Who Will Face the Train?

It seems like the worst is behind for the Turkish industry and a recovery is fully in place. GDP is rising, exports are increasing, credit expansion is gaining momentum, and expectations are improving. While all this was happening, Industrial Production (IP) behaviour did not receive the attention it deserved in terms of analytical investigations and sub-sector performances were virtually neglected. We developed an analytical tool kit for looking into the extent of the hit and prospects for recovery at subsector level and introduced that in our “YK Macro Brief: Impact Assessment at the Subsector Level: Damage vs. Prospects”. This new piece is an updated version of that Macro Brief, but it also classifies subsectors according to their response to the crisis, both damage-wise and prospects/growth momentum-wise.

### Digression Box: A Brief Summary of “YK Macro Brief: Impact Assessment at the Subsector Level: Damage vs. Prospects”

When a series is subject to drastic level changes just like IP series are in times of crises, mom change is a better indicator of performance than yoy changes for obvious reasons. A mom change oriented approach requires double filtering to remove the impact of seasonality and working day (calendar) effects. In this piece, sub-sectors are investigated following the double filtering process, and processed data are used to obtain starting date of the crisis, long-run trend, average production loss per month for each sector, production loss (in terms of one month’s production-average), slope of recovery, catch-up ratio (current production level / potential production level), and. The graph below for “Machinery and Equipment” sub-sector is chosen at random as an example to guide the reader through the points previously made and the ones to follow.



Long Run Trend	EDC Arch
Off Trend Performance during Crisis	DG
Production Loss (in terms of one month's output multiple)	Shaded Area
Months in Crisis	Month B- Month A
Average Production Loss per Month	Shaded Area / (Month B- Month Z)
Slope of LR Trend before the Hit	Average time derivative of output in Equation 1 in the vicinity of month A
Slope of Recovery	Trend Slope in the Recovery Period (circled zone)
Catch-up Ratio	BG/BC
Adjusted Recovery Slope	Slope of Recovery times (CG/BC ratio)
First Hit	Month A
Beginning of Recovery	Month F

For more details on the methodology used please click on the following link: [http://www.yapikredi.com.tr/en-US/macroeconomic\\_research/pdf/macro\\_briefs/ImpactAssessmentattheSubsectorLevelDamagevsProspects.pdf](http://www.yapikredi.com.tr/en-US/macroeconomic_research/pdf/macro_briefs/ImpactAssessmentattheSubsectorLevelDamagevsProspects.pdf)

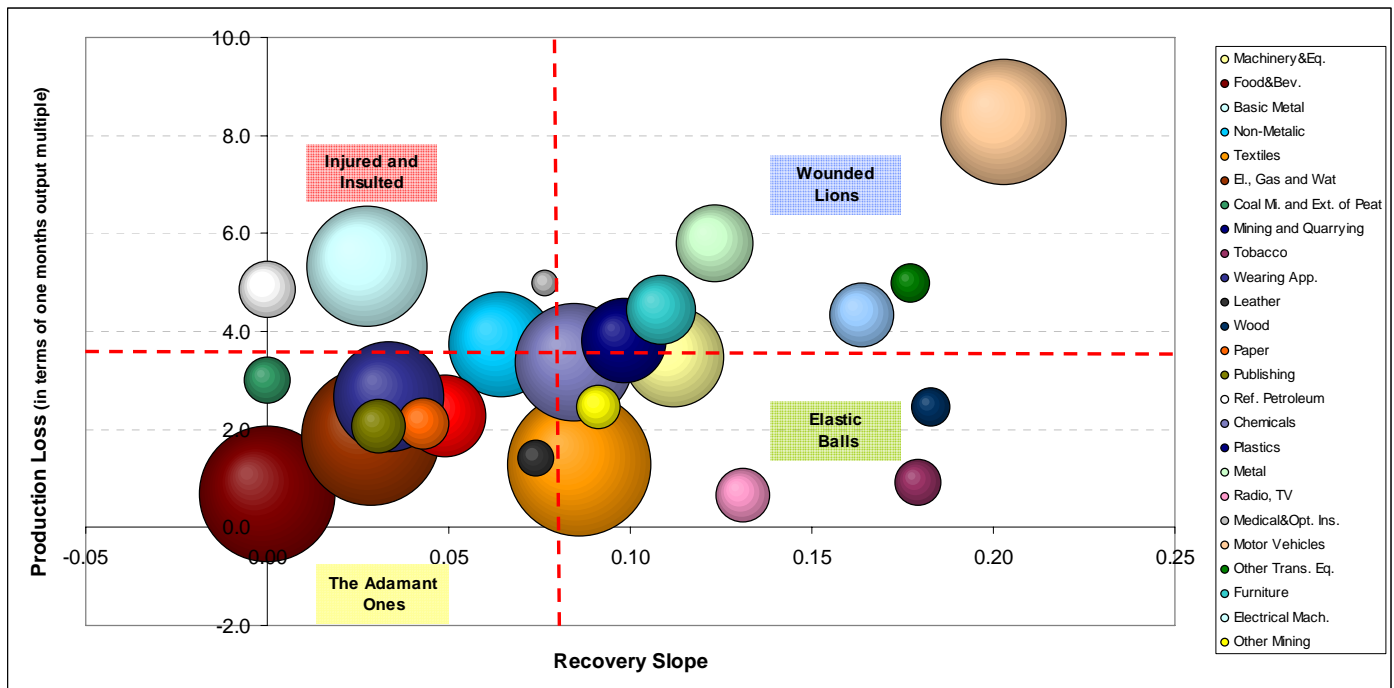
For more details on effective days adjustment please click on the following link: [http://www.yapikredi.com.tr/en-US/macroeconomic\\_research/pdf/macro\\_briefs/2008-10-13.pdf](http://www.yapikredi.com.tr/en-US/macroeconomic_research/pdf/macro_briefs/2008-10-13.pdf)

The table below is a detailed analysis of subsector performances based on most recently released February data. It looks scary even to the interested reader at first sight and it is. Making things worse for those willing to dive into it, a column by itself may not be very telling and has some explanatory power only when simultaneously analyzed with a few more. We chose to simplify the process for you and clustered the sectors first according to their response to crisis- in a crisis impact/assessment sense- and then expanded the clusters according to their future prospects.

	Production Loss (in terms of one month's output multiple)	Months in Crisis	Average		Catch-up Ratio		Adjusted Recovery Slope	First Hit	Beginning of the Recovery
			Production Loss per Month	Slope of LR Trend before the Hit	(Current/ Potential )	Slope of Recovery			
<b>Total Industry</b>	3.67	21	17.5%	0.0306	0.0786	0.839	0.0660	Jun-08	Apr-09
Mining and Quarrying	2.27	20	11.3%	0.0425	0.0488	0.831	0.0405	Jul-08	Mar-09
Coal Mi. and Ext. of Peat	3.02	20	15.1%	0.0771	0	0.661	0.0000	Jul-08	N/A
Crude Pet. and Nat. Gas	0.10	3	3.3%	0.1125	0.4718	0.993	0.4685	Dec-08	Jan-09
<b>Metallic Ore Mining</b>	2.24	11	20.4%	0.1609	0.4728	1.220	0.4728	Nov-08	Mar-09
Other Mining	2.46	16	15.4%	0.0127	0.0912	0.964	0.0879	Nov-08	Jun-09
Manufacturing Industry	3.75	21	17.9%	0.0261	0.0869	0.851	0.0739	Jun-08	Apr-09
Food&Bev.	0.70	10	7.0%	0.0141	0	1.064	0.0000	Dec-08	Oct-09
Tobacco	0.92	9	10.2%	0.0137	0.1792	0.783	0.1404	Mar-09	Jun-09
Textiles	1.29	10	12.9%	-0.0210	0.0858	1.108	0.0858	Dec-08	Mar-09
Wearing App.	2.67	21	12.7%	-0.0056	0.0334	0.951	0.0318	Jul-08	Apr-09
Leather	1.41	14	10.1%	-0.0104	0.074	1.009	0.0740	Nov-08	Jan-09
Wood	2.46	18	13.7%	0.0829	0.1829	1.053	0.1829	Jul-08	Mar-09
Paper	2.13	20	10.7%	0.0305	0.0431	0.881	0.0380	Jul-08	Mar-09
Publishing	2.07	20	10.4%	0.0206	0.0308	0.893	0.0275	Jul-08	Jan-09
Ref. Petroleum	4.87	17	28.7%	0.0061	0	0.616	0.0000	Jul-08	Apr-09
Chemicals	3.38	24	14.1%	0.0453	0.0844	0.857	0.0724	Mar-08	Jan-09
Plastics	3.82	21	18.2%	0.0289	0.0982	0.900	0.0884	Jun-08	Mar-09
Non-Metallic	3.74	21	17.8%	0.0182	0.0646	0.837	0.0540	Jun-08	Apr-09
Basic Metal	5.32	20	26.6%	0.0459	0.0274	0.689	0.0189	Jul-08	Jan-09
<b>Metal</b>	5.60	22	26.4%	0.0385	0.1234	0.828	0.1021	May-08	May-09
Machinery&Eq.	3.49	20	17.4%	0.0201	0.1118	0.864	0.0965	Jul-08	Apr-09
Electrical Mach.	4.35	19	22.9%	0.0590	0.1639	0.814	0.1334	Aug-08	Apr-09
Radio, TV	0.67	7	9.6%	-0.0056	0.131	2.018	0.1310	Sep-08	Feb-09
Medical&Opt. Ins.	5.00	20	25.0%	0.0831	0.0764	0.757	0.0578	Jul-08	Mar-09
Motor Vehicles	8.28	22	37.6%	0.2619	0.2027	0.669	0.1356	May-08	Mar-09
Other Trans. Eq.	4.99	14	35.7%	0.1481	0.1772	0.557	0.0987	Jan-09	Aug-09
Furniture	4.44	23	19.3%	0.0791	0.1085	0.779	0.0845	Apr-08	Mar-09
El., Gas and Wat	1.86	18	10.4%	0.0360	0.0284	0.875	0.0248	Sep-08	May-09

To assess the performance of sectors during the crisis and in the recovery period, we selected production loss and slope of recovery columns (criteria) as our benchmarking tools. We created a matrix using the total industry's averages as demarcation lines (production loss: 3.67 months and recovery slope: 0.0786), and four separate zones were accordingly created for clustering purposes. Movements to southeast imply improvements and those to northwest deterioration in our two-dimensional set-up. The names we gave to each zone are given below:

- Low production loss - Low recovery slope zone : The Adamant Ones
- Low production loss - High recovery slope zone : Elastic Balls
- High production loss - Low recovery slope zone : Injured and Insulted
- High production loss - High recovery slope zone : Wounded Lions



**The Adamant Ones:** Sectors falling under this category suffered less than total industry’s average production loss, but their recovery pace is also lower than average. Typically, sectors comprising this cluster are either large sectors such as Food and Beverages, Electricity, Water, and Gas (facing inelastic demand/natural monopolies) or small but relatively less export-oriented sectors such as Paper Products and Publishing and Printing Press. Sectors in this zone- ranked by representative power- are: Food and Beverages, Electricity, Gas and Water, Publishing, Paper Products, Mining and Quarrying, Wearing Apparel, Coal Mining and Extraction of Peat and Leather Products. Leather products are close to Elastic Balls border, indicating a status better than the rest of the bunch with regards to recovery pace. Meanwhile, Coal Mining and Extraction of Peat are in the vicinity of Paralyzed Ones zone implicating sub-par performances within the Adamant Ones category.

**Elastic Balls:** This is the shining stars’ zone; sectors under this category did not suffer much of an output loss and their recovery slopes are higher than average. Sectors in this cluster could in turn be divided into two subgroups; small sized “quintessential” elastic balls which displayed commendable recovery pace; namely, Tobacco Products, Wood Products (excl. Furniture), Radio-TV and-to some extent-Other Mining sectors, and large “barely qualifying” sectors such as Textiles (close to the Adamant Ones zone), Machinery and Equipment (neighbour to Wounded Lions) and Chemicals (practically located at the intersection of the demarcation lines).

**Wounded Lions:** This zone is predominantly composed of export sectors which were deeply hit by global trade contraction. Recovery in export markets and some (forced) market diversification led to a significant bounce back which had a lot to do with base effect. As openness to foreign trade increases, both impact and reaction are amplified as clearly depicted by the case of Motor Vehicles which was by far the most hurt in terms of production loss yet ended up as the strongest performer in terms of recovery pace. Incentive schemes at home and abroad naturally helped as well. Metal Products, Other Transport Equipment, Electrical Machinery, and Furniture Production are other sectors that could be characterized as “Wounded Lions”. Plastics sector is in close proximity to the Elastic Balls zone and its slightly higher production loss than those in the Elastic Balls zone led us to categorize them as Wounded Lions instead.

**Injured and Insulted:** This is the true loser cluster among the four. Sectors under this cluster suffered production losses higher than the overall average and adding insult upon injury, their recovery pace happens to be lower than average. Refined Petroleum and Basic Metal Sectors are the most troubled in this cluster as they are not even close to any bordering zone, while Non-Metallic Products and Medical Optical and Precision Devices show up as relatively better performers which got stuck in this zone by a nose.

In trying to game some insight into future prospects of all these subsectors, we resorted to the long term trends (trend slopes more precisely) of sectors and their catch-up ratios; the ratio of their current double filtered (seasonally and effective days-wise) levels over what these levels would have been had their long term trends not been interrupted by the infamous crisis. Combination of these two should help us figure out each sector's possible destiny with reasonable margins of error. The rationale behind the selection of long-run trend is self-explanatory while catch-up ratio will serve to inform us whether there was a shift in that long-run trend, for better or for worse.

In the crisis assessment matrix we utilized initially, two demarcation lines sufficed to define zones appropriately. Prospect assessment is a bit trickier. We utilize four demarcation lines at this juncture and thus end up with a matrix with nine zones instead of four. For each category utilized in this section, long term trend and catch-up ratio that is, we use two demarcation lines. Take the long term trend category first. The first of the two new demarcation lines pertains to differentiation with respect to bright prospects vs. bleak prospects (below **zero** long-run trend vs. **positive** long-run trend) in the long run while the second one is simply the Industrial Production average for long run trend. Analogously, for the catch-up ratio category which serves the purpose of assessing crisis performance vis-à-vis the long term trend-implied level, we set one demarcation line at 1 and another at the IP average. A catch-up ratio greater than one means the sector has exceeded its long-run trend and may have indeed used the crisis as an opportunity. The resultant graphical representation and the labelling we chose for the zones in question are given below:

**Trend > IP Average AND Catch-up ratio < IP Average => Goldies When Young** (over-performers of the pre-crisis period but truly suffering as of late)

**Trend > IP Average AND IP Average < Catch-up ratio < 1 => Blessed Mortals** (doing simply great, already had a stronger long-run trend than IP average and they seem to have managed to get back on track faster than most other sectors)

**Trend > IP Average AND Catch-up ratio > IP Average => Olympus Residents** (a teaser for the patient reader: We have only two sectors in this holy region!)

**IP Average > Trend > 0 AND Catch-up ratio < IP Average => Struggling Traditionalists** (Could it be that the crisis worked as a catalyst for the inevitable (?) downsizing of sectors placed under this category?)

**IP Average > Trend > 0 AND 1 > Catch-up ratio > IP Average => Leading Traditionalists**

**IP Average > Trend > 0 AND Catch-up ratio > 1 => Opportunists** (exploiting the crisis as an opportunity for restructuring and heading into the post-crisis era with a strong momentum?)

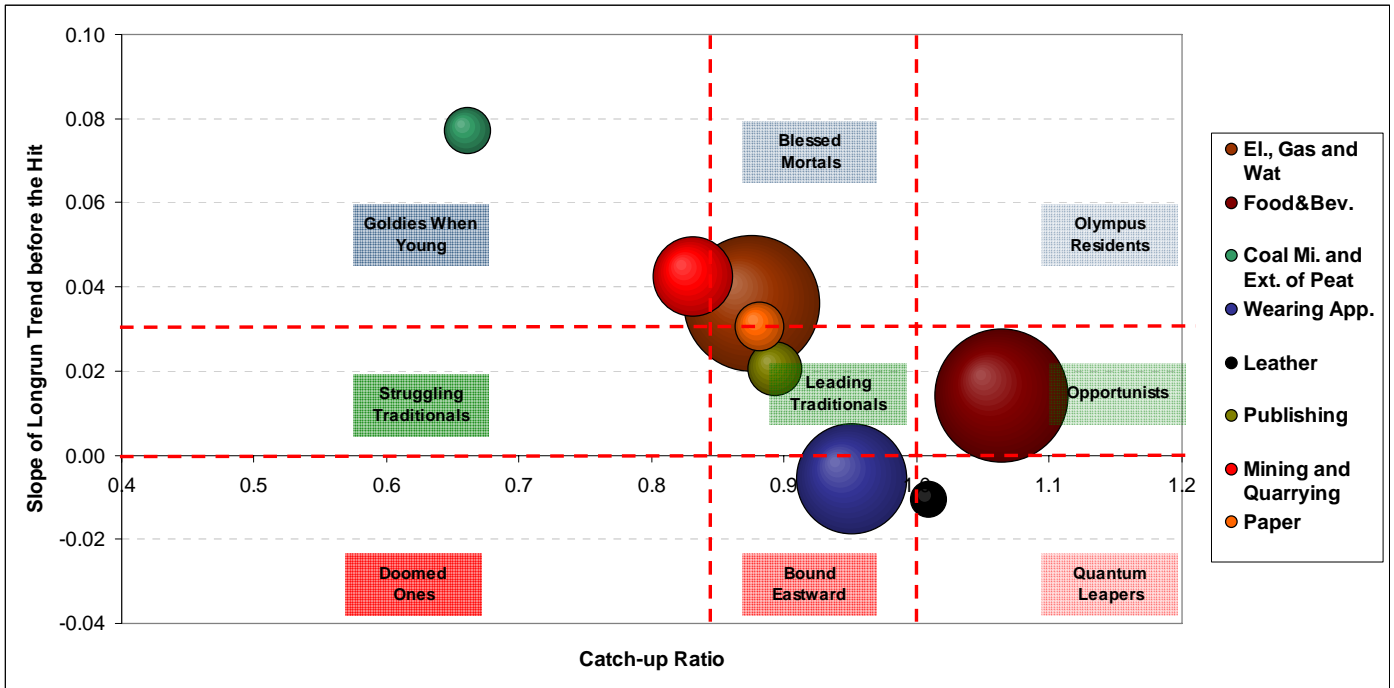
**Trend < 0 AND Catch-up ratio < IP Average => Doomed Ones** – (good news! No sector in this zone but a scare factor nevertheless for Struggling Traditionalists and Eastern Movers)

**Trend < 0 AND 1 > Catch-up ratio > IP Average => Bound Eastward** - (production likely to move to countries to the east of Turkey or face bleak prospects)

**Trend < 0 AND Catch-up ratio > 1=> Quantum Leapers** – (born again in the crisis? the Awakening?)

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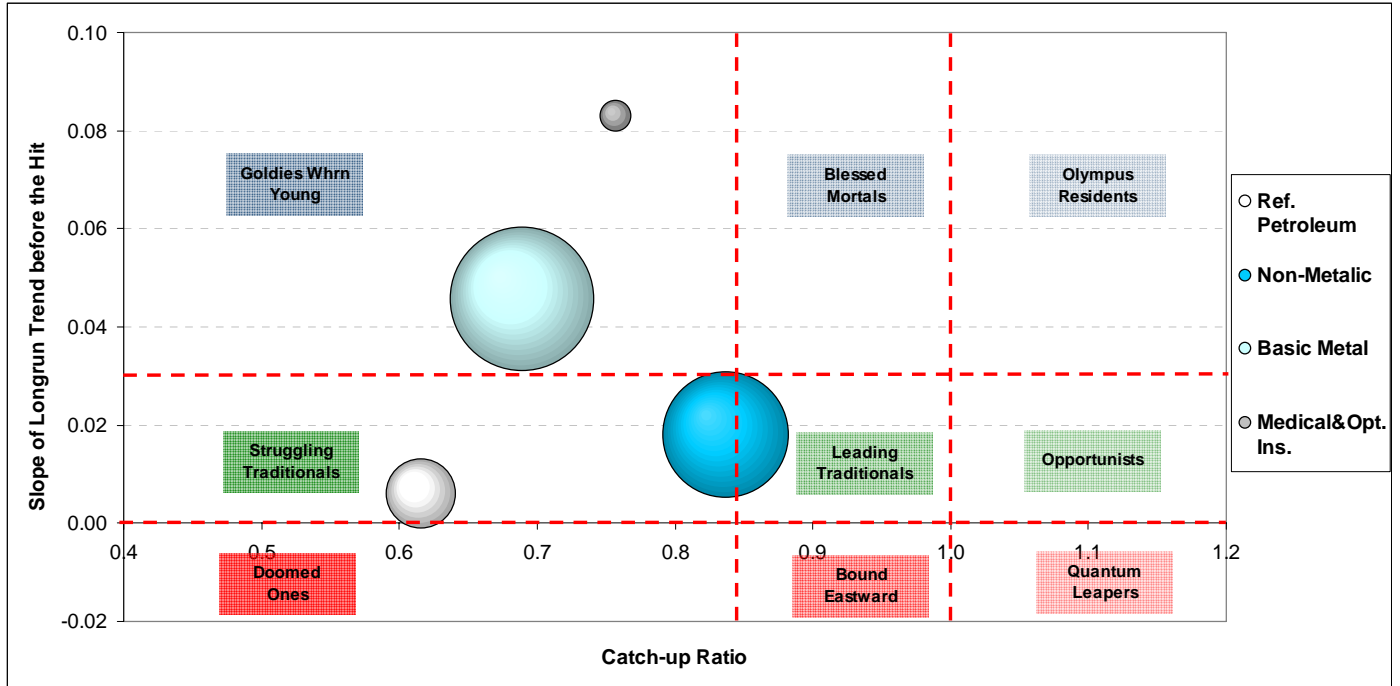
\_The Adamant Ones\_



We can now assess the performance of sectors categorized with respect to production loss and recovery pace vis-à-vis their growth prospects as obtained through long run trend and catch-up ratio.

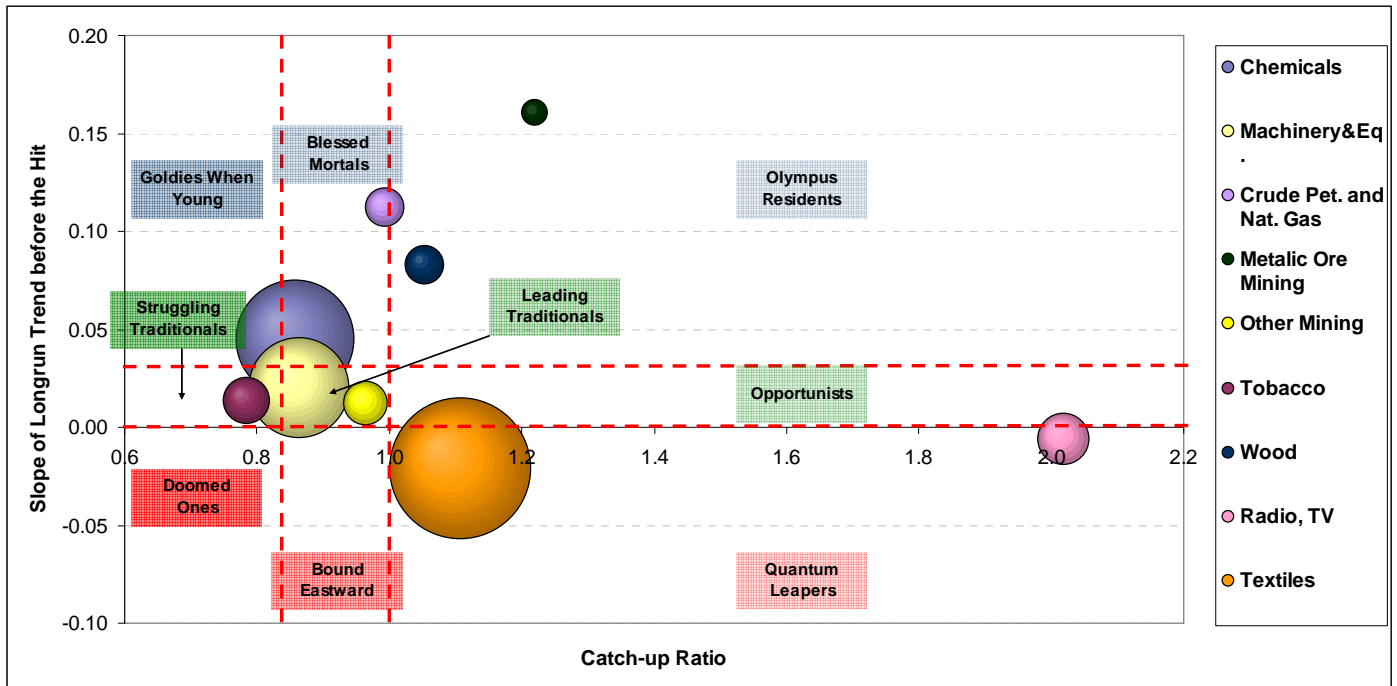
Let's begin with "the Adamant Ones". This "low damage/slow recovery" cluster displays significant within cluster variation in terms of growth potential.

The most troubled sector in the cluster seems to be Wearing Apparel, a member of the Bound Eastward squad. Food and Beverages seems to have made a living out of the crisis and found a place for itself in the Opportunists zone. The ever so troubled Leather sector has managed to slide into the Quantum Leapers zone but its prevalent high negative trend stands as a big concern. Electricity, Gas and Water is located in Blessed Mortals zone but is presumably an unlikely candidate for Olympus. The crisis seems to have hurt Coal Mining's robust growth pattern discernibly and regaining pre-crisis momentum looks like a daunting task.

\_Injured and Insulted\_

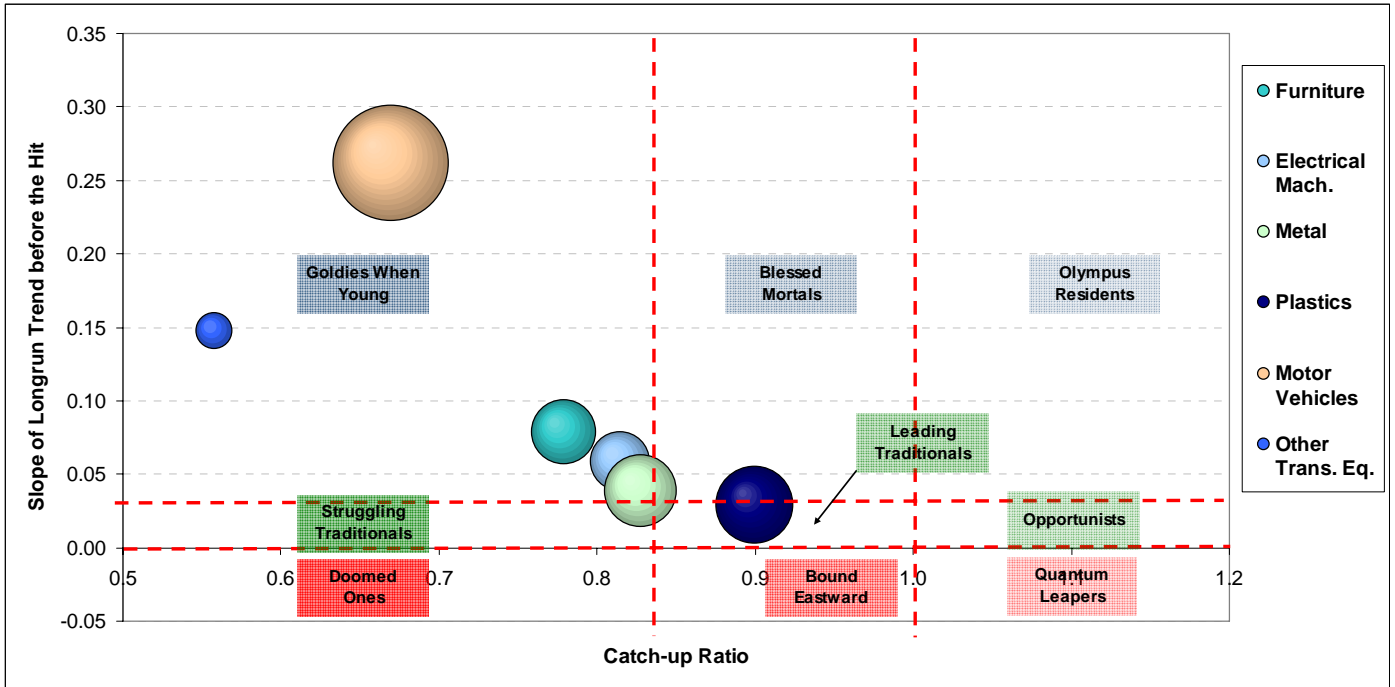
The second cluster we look into is the hardest hit, the most troubled, and seemingly the least promising Injured and Insulted. The overall picture is not very promising as all sectors registered catch-up ratios below the IP average. The only good news is that there are no sectors in the Doomed Ones territory. The worst performer turns out to be the Refined Petroleum sector; its catch up ratio is pathetic and its long run trend is barely above zero. Basic Metals sector does not promise much either with its substantially low catch-up ratio. Moreover, its average long run trend which happens to be higher than IP average may not be strong enough to bring back shiny days to the sector. Non-Metallic Products is not far from its potential, and that is some consolation in this misery zone. Medical and Optical Instruments displayed strong growth dynamics prior to the crisis but has been hit hard, does not promise much at the moment, and must be desperately longing for the good old days. It is still not very wise to bet on any of the sectors in this cluster.

Elastic Balls



Elastic Balls, the shining stars of IP in terms of extent of hit suffered and recovery pace, display some interesting characteristics when analyzed through our second criterion set. Let us start with one of the tricky sectors, Tobacco Products. It shows up as a Struggling Traditionalist. Now one can ask how this could have happened. The story is presumably as follows: following a relatively minor hit and the Government’s controversial (from the standpoint of the sector) tax hike imposed on cigarette, the players in the sector played tit for tat with the Government and expanded output while keeping the price low and thus inflicting punishment on the Government and willingly suffering a loss themselves. The off-shooting in production was naturally tamed afterwards and the sector ended up as a Struggling Traditionalist. It may move eastward somewhat but star quality is definitely missing. Machinery and Equipment sector managed to become an Elastic Ball by a nose and is classified as a Leading Traditionalist as a result of our second filtering process. Overall, this cluster’s future seems quite bright; we have two Olympus Residents- Wood Products and Metallic Ore Mining, and two Blessed Immortals- Chemicals and Crude Petroleum and Natural Gas sectors. The only reservation we should express for this cluster is that with the exception of Chemicals sector, which is not a star in terms of our second filter, they are fairly tiny and do not add up to a decisive mass in IP. Closing this cluster’s discussion on a pleasant note, it is worth noting that Textiles and Radio-TV sectors surpassed their potential levels by notable margins. Radio-TV sector in particular so over-performed its potential (very high catch-up ratio) that it had altered the Matrix topography and made Textiles success look less impressive and mitigated its profile.

\_Wounded Lions\_



The Wounded Lions cluster is predominantly export oriented as we mentioned before, and it is thus not surprising to spot them in the Goldies When Young territory. As the impact of global trade contraction wanes, Wounded Lions will see their status enhanced. Other Transport Equipment sector seems to be the only sector that may be in some trouble as suggested by its seriously low catch-up ratio. Motor Vehicles' current catch-up ratio may raise some concerns as well but its wild long run trend slope may suppress these concerns at least until verified in normal times. The outlier in this cluster is Plastics with its low exports share and high catch-up ratio.

We will continue to evaluate sub-sector performances in the aftermath of the crisis and try to identify all meaningful cluster switches and/or categorical changes in the second filtering process. As always, we will produce follow-up notes with comprehensive total IP evaluations as well. So stay tuned.

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