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A Two Factor Model Influences the Risk Level of Viet Nam Manufacturing Material Companies

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Abstract

This research shows marketing factors such as business competitors could affect business market risk, from a quantitative point of view. Using a two (2) factors model, this research paper estimates the impacts of not only the size of firms' competitors, but also leverage in the manufacturing material industry, on the market risk of 99 listed companies in this category. This paper founds out that the risk dispersion level in this sample study could be minimized in case the competitor size is approximately the same (measured by equity beta var of 0,09) and leverage up to 30%. Beside, the emprical research findings show us that when financial leverage increases up to 30%, max asset beta value increases from 1,162 to 1,419 in case the size of competitor doubles. Last but not least, this paper illustrates calculated results that might give proper recommendations to relevant governments and institutions in re-evaluating their policies during and after the financial crisis 2007-2011.

Keywords: Risk Management, Competitive Firm Size, Market Risk, Asset and Equity Beta, Manufacturing Material Industry
JEL CLASSIFICATION : M0, G3, M3

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1. Introduction

In marketing and business, choosing competitors might affect business strategies, esp., during the crisis period 2007-2009 in which manufacturing material firms experience many risks, although Viet Nam manufacturing material industry is considered as one of active economic sectors, which has some positive effects for the economy.

This paper is organized as follow. The research issues and literature review will be covered in next sessions 2 and 3, for a short summary. Then, methodology and conceptual theories are introduced in session 4 and 5. Session 6 describes the data in empirical analysis. Session 7 presents empirical results and findings. Next, session 8 covers the analytical results. Lastly, session 10 will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

2. Research Issues

For the estimating of impacts of the selection of different industrial competitors on the risk measured by beta for listed manufacturing material companies in Viet Nam stock exchange, research issues will be mentioned as following:

Issue 1: Whether the selection of different competitors makes the risk level of manufacturing material industry firms under the different changing scenarios of leverage increase or decrease so much.

Issue 2: Whether the selection of doubling size competitor makes the dispersion of beta values become large in the different changing scenarios of leverage in this industry.

3. Literature review

Goldsmith (1969), Mc Kinnon (1973) and Shaw (1973) pointed a large and active theoretical and empirical literature has related financial development to the economic growth process.

Liu and John (2011) stated risks varied across bank types and the relationship between competition and risk also varies across bank types based on different initial levels of risk. Ratnovski (2013) pointed banks in advanced economies today have high incentives to take risk. And following a crisis, bank competition policy should facilitate resolution by temporarily allowing higher concentration and government control of banks.

Last but not least, Ana and John (2013) Binomial Leverage – Volatility theorem provides a precise link between leverage and volatility. Chen et all (2013) supports suspicions that over-reliance on short-term funding and insufficient collateral compounded the effects of dangerously high leverage and resulted in undercapitalization and excessive risk exposure for Lehman Brothers.

4. Conceptual theories

Industrial competitor theories

Michael Porter is the guru of competitive strategy, who pointed that commpanies' route to success lay in competing not just against their direct competitors, but against their suppliers and customers as well. Merriam-Webster defines competition in business as "the effort of two or more parties acting independently to secure the business of a third party by offering the most favorable terms". Competition can generate lower prices and better products or goods delivered to more customers.

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5. Methodology

In this research, analytical research method is used, philosophical method is used and specially, scenario analysis method is used. Analytical data is from the situation of listed manufacturing material industry firms in VN stock exchange and applied current tax rate is 25%.

Finally, we use the results to suggest policy for both these enterprises, relevant organizations and government.

Table 1 – Analyzing market risk under three (3) scenarios of changing competitors (Made by Author)

Order No.	Company Stock code	Competitor size as current	Competitor size slightly smaller	Competitor size double
1	COM			
2	AAA	VID as comparable	HAP as comparable	TCS as comparable
3	ALV	MMC as comparable	HTP as comparable	GER as comparable
4	AMC	CPC as comparable	MMC as comparable	MIC as comparable
5	APP	CPC as comparable	BMJ as comparable	BRC as comparable
6	BGM	GTA as comparable	CZC as comparable	BVG as comparable
7	BKC			
8	BMC			
9	BMJ			
10	BRC	TPP as comparable	CMI as comparable	KMT as comparable
11	BVG	COM as comparable	COM as comparable	TSC as comparable
12	BVN	BMC as comparable	BGM as comparable	BVG as comparable
13	CAP	CPC as comparable	CPC as comparable	CMI as comparable
14	CMI	KKC as comparable	KKC as comparable	HPP as comparable
15	CPC			
16	CTM	DTT as comparable	APP as comparable	BVN as comparable
17	CZC	HVT as comparable	BRC as comparable	KMT as comparable
18	DAG	DHC as comparable	DHC as comparable	HMC as comparable
19	DHC			
20	DHM	HGM as comparable	BMC as comparable	DAG as comparable
21	DLG	SQC as comparable	DTL as comparable	PET as comparable
22	DNS	BVG as comparable	BVG as comparable	HMC as comparable
23	DNY	SQC as comparable	HLC as comparable	PHR as comparable
24	DPM			
25	DPR			
26	DTL	DLG as comparable	DNY as comparable	PET as comparable
27	DTT			
28	GER	MMC as comparable	VDT as comparable	DTT as comparable
29	GTA			
30	HAI			

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31	HAP			
32	HGM			
33	HLA			
34	HLC			
35	HMC			
36	HPG			
37	HPP	KMT as comparable	KSA as comparable	THT as comparable
38	HRC			
39	HSG			
40	HSI			
41	HVC	HRC as comparable	DAG as comparable	HLC as comparable
42	HVT			
43	KHB	DTT as comparable	MIM as comparable	KSH as comparable
44	KKC			
45	KMT			
46	KSA	KMT as comparable	BMC as comparable	KSB as comparable
47	KSB			
48	KSH			
49	KSS			
50	KTB	COM as comparable	KMT as comparable	AAA as comparable
51	LAS	DPR as comparable	DLG as comparable	PET as comparable
52	LCM	KHB as comparable	KHB as comparable	MIH as comparable
53	MAX	CZC as comparable	TNB as comparable	KTB as comparable
54	MDC			
55	MDF	DNS as comparable	KTB as comparable	NBC as comparable
56	MHL			
57	MIC			
58	MIH	HVT as comparable	MAX as comparable	KTB as comparable
59	MIM	APP as comparable	MHL as comparable	MAX as comparable
60	MMC			
61	NBC			
62	NKG	DTL as comparable	DTL as comparable	PET as comparable
63	NSP	ALV as comparable	ALV as comparable	AMC as comparable
64	NVC			
65	PHR			
66	PHT			
67	PLC			
68	POM	TIS as comparable	HSG as comparable	TIS as comparable
69	PTK	KSH as comparable	SHA as comparable	KSH as comparable
70	RDP			

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71	SHA	KSH as comparable	MIH as comparable	KSH as comparable
72	SHI			
73	SMC			
74	SPC	VCA as comparable	MDF as comparable	VCA as comparable
75	SQC			
76	SSM			
77	TC6			
78	TCS			
79	TDN			
80	TDS	PHT as comparable	SPC as comparable	PHT as comparable
81	THT			
82	TIS	DPM as comparable	HSG as comparable	HPG as comparable
83	TLH	TDN as comparable	TC6 as comparable	TTF as comparable
84	TNB	CZC as comparable	TNT as comparable	KMT as comparable
85	TNC			
86	TNT	SSM as comparable	SSM as comparable	TNC as comparable
87	TPC			
88	TPP			
89	TRC			
90	TSC			
91	TTF			
92	TVD	TRC as comparable	TLH as comparable	TTF as comparable
93	VCA	RDP as comparable	SPC as comparable	NVC as comparable
94	VDT	MMC as comparable	NSP as comparable	KHB as comparable
95	VFG			
96	VGS			
97	VID			
98	VIS			
99	VKP			

6. General Data Analysis

The research sample has total 99 listed firms in the manufacturing material industry market with the live data from the stock exchange.

Firstly, we estimate equity beta values of these firms and use financial leverage to estimate asset beta values of them. Secondly, we change the competitors from what reported in F.S 2011 to those with size doubling and reducing slightly to see the sensitivity of beta values. We found out that in 3 cases, asset beta mean values are estimated at 0,471, 0,389 and 0,539 which are negatively correlated with the leverage. Also in 3 scenarios of different competitors, we find out equity beta mean values (0,244, 0,368 and 0,338) are moving in the same direction with the leverage. Leverage degree changes definitely has certain effects on asset and equity beta values.

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7. Empirical Research Findings and Discussion

In the below section, data used are from total 104 listed construction industry companies on VN stock exchange (HOSE and HNX mainly). In the scenario 1, current financial leverage degree is kept as in the 2011 financial statements which is used to calculate market risk (beta) whereas competitor size is kept as current, then changed from double size to slightly smaller size. Then, two (2) FL scenarios are changed up to 30% and down to 20%, compared to the current FL degree. In short, the below table 1 shows three scenarios used for analyzing the risk level of these listed firms.

Market risk (beta) under the impact of tax rate, includes: 1) equity beta; and 2) asset beta.

Table 1 – Analyzing market risk under three (3) scenarios (Made by Author)

	FL as current	FL up 30%	FL down 20%
Competitor size as current	Scenario 1	Scenario 2	Scenario 3
Competitor size slightly smaller			
Competitor size double			

7.1 Scenario 1: current financial leverage (FL) as in financial reports 2011 and competitor size kept as current, slightly smaller and double

In this case, all beta values of 99 listed firms on VN manufacturing material industry market as following:

Table 2 – Market risk of listed companies on VN manufacturing material industry market under a two factors model (case 1) (source: VN stock exchange 2012)

Order No.	**Company stock code**	**Competitor size as current**		**Competitor size slightly smaller**		**Competitor size double**	
		Equity beta	**Asset beta (assume debt beta = 0)**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Equity beta**	**Asset beta (assume debt beta = 0)**
1	COM	0,604	0,473	0,604	0,473	0,604	0,473
2	AAA	0,403	0,186	0,681	0,314	0,479	0,221
3	ALV	0,890	0,618	0,820	0,569	0,287	0,199
4	AMC	0,781	0,450	0,763	0,440	0,914	0,527
5	APP	0,799	0,474	-1,131	-0,671	0,631	0,374
6	BGM	0,719	0,672	0,239	0,224	0,288	0,269
7	BKC	1,339	0,928	1,339	0,928	1,339	0,928
8	BMC	1,433	1,036	1,433	1,036	1,433	1,036
9	BMJ	-1,712	-1,377	-1,712	-1,377	-1,712	-1,377
10	BRC	0,835	0,587	0,665	0,467	0,956	0,672
11	BVG	0,197	0,053	0,197	0,053	0,303	0,081
12	BVN	0,531	0,163	0,089	0,027	0,112	0,034
13	CAP	0,543	0,205	0,543	0,205	0,106	0,040

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14	CMI	0,875	0,384	0,875	0,384	0,235	0,103
15	CPC	1,211	0,937	1,211	0,937	1,211	0,937
16	CTM	0,350	0,178	-0,655	-0,333	0,065	0,033
17	CZC	0,090	0,028	0,252	0,079	0,477	0,150
18	DAG	0,435	0,134	0,435	0,134	0,456	0,140
19	DHC	1,170	0,461	1,170	0,461	1,170	0,461
20	DHM	0,432	0,240	0,896	0,499	0,286	0,159
21	DLG	0,055	0,014	0,022	0,006	0,404	0,105
22	DNS	0,076	0,025	0,076	0,025	0,475	0,153
23	DNY	0,063	0,018	0,142	0,042	0,169	0,050
24	DPM	0,785	0,686	0,785	0,686	0,785	0,686
25	DPR	1,043	0,808	1,043	0,808	1,043	0,808
26	DTL	0,027	0,011	0,069	0,028	0,613	0,252
27	DTT	0,605	0,517	0,605	0,517	0,605	0,517
28	GER	0,746	0,419	0,265	0,149	0,381	0,214
29	GTA	0,757	0,569	0,757	0,569	0,757	0,569
30	HAI	0,823	0,456	0,823	0,456	0,823	0,456
31	HAP	1,280	1,018	1,280	1,018	1,280	1,018
32	HGM	0,691	0,535	0,691	0,535	0,691	0,535
33	HLA	1,833	0,339	1,833	0,339	1,833	0,339
34	HLC	0,397	0,045	0,397	0,045	0,397	0,045
35	HMC	1,227	0,348	1,227	0,348	1,227	0,348
36	HPG	0,969	0,424	0,969	0,424	0,969	0,424
37	HPP	0,627	0,268	0,487	0,208	0,462	0,197
38	HRC	0,971	0,750	0,971	0,750	0,971	0,750
39	HSG	1,821	0,587	1,821	0,587	1,821	0,587
40	HSI	0,748	0,154	0,748	0,154	0,748	0,154
41	HVC	0,314	0,083	0,141	0,037	0,128	0,034
42	HVT	0,238	0,105	0,238	0,105	0,238	0,105
43	KHB	0,550	0,486	0,233	0,206	1,607	1,419
44	KKC	1,717	0,860	1,717	0,860	1,717	0,860
45	KMT	1,259	0,386	1,259	0,386	1,259	0,386
46	KSA	0,859	0,530	0,977	0,603	0,752	0,464
47	KSB	1,103	0,705	1,103	0,705	1,103	0,705
48	KSH	1,766	1,162	1,766	1,162	1,766	1,162
49	KSS	2,089	1,049	2,089	1,049	2,089	1,049
50	KTB	0,485	0,366	1,011	0,762	0,385	0,290
51	LAS	0,478	0,185	0,010	0,004	0,583	0,226
52	LCM	0,542	0,531	0,230	0,225	0,108	0,106
53	MAX	0,066	0,044	0,632	0,421	0,280	0,186

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54	MDC	0,546	0,126	0,546	0,126	0,546	0,126
55	MDF	0,067	0,057	0,890	0,754	0,994	0,842
56	MHL	0,482	0,252	0,482	0,252	0,482	0,252
57	MIC	1,417	0,902	1,417	0,902	1,417	0,902
58	MIH	0,068	0,016	0,180	0,041	0,110	0,025
59	MIM	0,425	0,196	0,256	0,118	0,149	0,068
60	MMC	1,183	0,990	1,183	0,990	1,183	0,990
61	NBC	1,129	0,273	1,129	0,273	1,129	0,273
62	NKG	0,007	0,002	0,018	0,004	0,340	0,073
63	NSP	0,811	0,719	0,748	0,663	0,834	0,739
64	NVC	0,353	0,050	0,353	0,050	0,353	0,050
65	PHR	0,471	0,268	0,471	0,268	0,471	0,268
66	PHT	0,912	0,477	0,912	0,477	0,912	0,477
67	PLC	1,338	0,448	1,338	0,448	1,338	0,448
68	POM	0,111	0,038	0,751	0,259	0,136	0,047
69	PTK	1,368	0,986	0,064	0,046	1,368	0,986
70	RDP	0,827	0,303	0,827	0,303	0,827	0,303
71	SHA	0,810	0,314	0,083	0,032	0,810	0,314
72	SHI	1,550	0,476	1,550	0,476	1,550	0,476
73	SMC	1,142	0,266	1,142	0,266	1,142	0,266
74	SPC	0,062	0,015	0,261	0,062	0,027	0,006
75	SQC	0,174	0,148	0,174	0,148	0,174	0,148
76	SSM	1,402	0,710	1,402	0,710	1,402	0,710
77	TC6	0,678	0,127	0,678	0,127	0,678	0,127
78	TCS	0,900	0,152	0,900	0,152	0,900	0,152
79	TDN	0,587	0,127	0,587	0,127	0,587	0,127
80	TDS	0,398	0,146	0,114	0,042	0,398	0,146
81	THT	0,927	0,294	0,927	0,294	0,927	0,294
82	TIS	0,268	0,075	0,623	0,175	0,331	0,093
83	TLH	0,320	0,151	0,369	0,175	0,858	0,405
84	TNB	0,072	0,054	0,870	0,654	1,009	0,758
85	TNC	0,949	0,846	0,949	0,846	0,949	0,846
86	TNT	1,085	0,781	1,085	0,781	0,735	0,529
87	TPC	1,062	0,531	1,062	0,531	1,062	0,531
88	TPP	1,100	0,321	1,100	0,321	1,100	0,321
89	TRC	1,185	0,917	1,185	0,917	1,185	0,917
90	TSC	0,928	0,204	0,928	0,204	0,928	0,204
91	TTF	1,576	0,392	1,576	0,392	1,576	0,392
92	TVD	0,235	0,037	0,073	0,011	0,313	0,049
93	VCA	0,212	0,044	0,067	0,014	0,091	0,019

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94	VDT	0,665	0,326	0,420	0,206	0,903	0,442
95	VFG	0,350	0,181	0,350	0,181	0,350	0,181
96	VGS	1,907	0,820	1,907	0,820	1,907	0,820
97	VID	0,757	0,272	0,757	0,272	0,757	0,272
98	VIS	1,289	0,500	1,289	0,500	1,289	0,500
99	VKP	0,877	0,131	0,877	0,131	0,877	0,131

7.2. Scenario 2: financial leverage increases up to 30% and competitor size kept as current, slightly smaller and double

If leverage increases up to 30%, all beta values of total 99 listed firms on VN manufacturing material industry market as below:

Table 3 – Market risks of listed manufacturing material industry firms under a two factors model (case 2) (source: VN stock exchange 2012)

Order No.	**Company stock code**	**Competitor size as current**		**Competitor size slightly smaller**		**Competitor size double**	
		Equity beta	**Asset beta (assume debt beta = 0)**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Equity beta**	**Asset beta (assume debt beta = 0)**
1	COM	0,282	0,434	0,604	0,473	0,604	0,473
2	AAA	0,701	0,082	0,598	0,275	0,421	0,194
3	ALV	0,397	0,477	0,763	0,530	0,240	0,167
4	AMC	0,550	0,284	0,690	0,398	0,826	0,476
5	APP	0,529	0,310	-1,026	-0,609	0,534	0,317
6	BGM	0,086	0,647	0,162	0,151	0,236	0,220
7	BKC	0,399	0,805	1,339	0,928	1,339	0,928
8	BMC	0,360	0,917	1,433	1,036	1,433	1,036
9	BMJ	0,255	-1,276	-1,712	-1,377	-1,712	-1,377
10	BRC	0,386	0,459	0,540	0,380	0,892	0,627
11	BVG	0,954	0,002	0,164	0,044	0,252	0,067
12	BVN	0,902	0,018	0,050	0,015	0,079	0,024
13	CAP	0,808	0,056	0,466	0,176	0,069	0,026
14	CMI	0,730	0,153	0,763	0,334	0,178	0,078
15	CPC	0,294	0,855	1,211	0,937	1,211	0,937
16	CTM	0,640	0,094	-0,528	-0,268	0,040	0,021
17	CZC	0,892	0,004	0,173	0,054	0,402	0,126
18	DAG	0,900	0,015	0,366	0,113	0,384	0,118
19	DHC	0,788	0,248	1,170	0,461	1,170	0,461
20	DHM	0,577	0,145	0,806	0,448	0,216	0,120
21	DLG	0,964	0,000	0,013	0,003	0,336	0,087

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22	DNS	0,882	0,001	0,054	0,017	0,401	0,129
23	DNY	0,916	0,002	0,119	0,035	0,142	0,042
24	DPM	0,163	0,657	0,785	0,686	0,785	0,686
25	DPR	0,293	0,738	1,043	0,808	1,043	0,808
26	DTL	0,766	0,001	0,050	0,020	0,530	0,218
27	DTT	0,189	0,491	0,605	0,517	0,605	0,517
28	GER	0,570	0,255	0,191	0,107	0,343	0,193
29	GTA	0,323	0,513	0,757	0,569	0,757	0,569
30	HAI	0,579	0,346	0,823	0,456	0,823	0,456
31	HAP	0,266	0,939	1,280	1,018	1,280	1,018
32	HGM	0,292	0,489	0,691	0,535	0,691	0,535
33	HLA	1,059	-0,109	1,833	0,339	1,833	0,339
34	HLC	1,153	-0,061	0,397	0,045	0,397	0,045
35	HMC	0,932	0,084	1,227	0,348	1,227	0,348
36	HPG	0,731	0,261	0,969	0,424	0,969	0,424
37	HPP	0,745	0,100	0,386	0,165	0,401	0,171
38	HRC	0,296	0,684	0,971	0,750	0,971	0,750
39	HSG	0,881	0,217	1,821	0,587	1,821	0,587
40	HSI	1,033	-0,025	0,748	0,154	0,748	0,154
41	HVC	0,957	0,002	0,098	0,026	0,107	0,028
42	HVT	0,725	0,065	0,238	0,105	0,238	0,105
43	KHB	0,152	0,452	0,199	0,176	1,564	1,382
44	KKC	0,649	0,603	1,717	0,860	1,717	0,860
45	KMT	0,901	0,125	1,259	0,386	1,259	0,386
46	KSA	0,498	0,362	0,892	0,551	0,687	0,424
47	KSB	0,469	0,585	1,103	0,705	1,103	0,705
48	KSH	0,445	0,981	1,766	1,162	1,766	1,162
49	KSS	0,647	0,737	2,089	1,049	2,089	1,049
50	KTB	0,320	0,303	0,955	0,719	0,319	0,240
51	LAS	0,796	0,054	0,005	0,002	0,501	0,194
52	LCM	0,026	0,509	0,195	0,191	0,073	0,072
53	MAX	0,434	0,012	0,516	0,344	0,214	0,143
54	MDC	1,001	-0,001	0,546	0,126	0,546	0,126
55	MDF	0,199	0,004	0,812	0,688	0,960	0,813
56	MHL	0,619	0,184	0,482	0,252	0,482	0,252
57	MIC	0,473	0,747	1,417	0,902	1,417	0,902
58	MIH	1,001	0,000	0,121	0,028	0,075	0,017
59	MIM	0,702	0,071	0,225	0,103	0,100	0,046
60	MMC	0,213	0,932	1,183	0,990	1,183	0,990
61	NBC	0,986	0,016	1,129	0,273	1,129	0,273

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62	NKG	1,021	0,000	0,011	0,002	0,279	0,060
63	NSP	0,148	0,597	0,678	0,601	0,734	0,650
64	NVC	1,115	-0,040	0,353	0,050	0,353	0,050
65	PHR	0,560	0,207	0,471	0,268	0,471	0,268
66	PHT	0,621	0,346	0,912	0,477	0,912	0,477
67	PLC	0,864	0,181	1,338	0,448	1,338	0,448
68	POM	0,852	0,002	0,638	0,220	0,097	0,033
69	PTK	0,363	0,788	0,035	0,025	1,282	0,924
70	RDP	0,824	0,145	0,827	0,303	0,827	0,303
71	SHA	0,795	0,092	0,048	0,019	0,696	0,270
72	SHI	0,901	0,154	1,550	0,476	1,550	0,476
73	SMC	0,997	0,004	1,142	0,266	1,142	0,266
74	SPC	0,991	0,000	0,197	0,047	0,018	0,004
75	SQC	0,194	0,141	0,174	0,148	0,174	0,148
76	SSM	0,642	0,502	1,402	0,710	1,402	0,710
77	TC6	1,057	-0,039	0,678	0,127	0,678	0,127
78	TCS	1,080	-0,072	0,900	0,152	0,900	0,152
79	TDN	1,019	-0,011	0,587	0,127	0,587	0,127
80	TDS	0,822	0,036	0,073	0,027	0,341	0,125
81	THT	0,888	0,104	0,927	0,294	0,927	0,294
82	TIS	0,936	0,004	0,520	0,146	0,277	0,078
83	TLH	0,686	0,070	0,325	0,154	0,755	0,357
84	TNB	0,323	0,017	0,769	0,578	0,952	0,716
85	TNC	0,141	0,815	0,949	0,846	0,949	0,846
86	TNT	0,364	0,623	1,016	0,731	0,688	0,495
87	TPC	0,650	0,372	1,062	0,531	1,062	0,531
88	TPP	0,921	0,087	1,100	0,321	1,100	0,321
89	TRC	0,294	0,836	1,185	0,917	1,185	0,917
90	TSC	1,014	-0,013	0,928	0,204	0,928	0,204
91	TTF	0,976	0,038	1,576	0,392	1,576	0,392
92	TVD	1,097	0,015	0,052	0,008	0,252	0,039
93	VCA	1,032	0,001	0,041	0,009	0,074	0,015
94	VDT	0,663	0,161	0,337	0,165	0,777	0,381
95	VFG	0,627	0,130	0,350	0,181	0,350	0,181
96	VGS	0,741	0,494	1,907	0,820	1,907	0,820
97	VID	0,833	0,127	0,757	0,272	0,757	0,272
98	VIS	0,795	0,264	1,289	0,500	1,289	0,500
99	VKP	1,105	-0,092	0,877	0,131	0,877	0,131

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7.3. Scenario 3: leverage decreases down to 20% and competitor size kept as current, slightly smaller and double

If leverage decreases down to 20%, all beta values of total 99 listed firms on the manufacturing material industry market in VN as following:

Table 4 – Market risk of listed manufacturing material industry firms under a two factors model (case 3) (source: VN stock exchange 2012)

Order No.	Company stock code	Competitor size as current		Competitor size slightly smaller		Competitor size double	
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
1	COM	0,604	0,499	0,604	0,473	0,604	0,473
2	AAA	0,483	0,274	0,752	0,346	0,529	0,244
3	ALV	0,952	0,719	0,863	0,599	0,326	0,226
4	AMC	0,875	0,579	0,822	0,474	0,984	0,567
5	APP	0,889	0,600	-1,213	-0,720	0,712	0,422
6	BGM	0,727	0,689	0,322	0,300	0,336	0,314
7	BKC	1,339	1,010	1,339	0,928	1,339	0,928
8	BMC	1,433	1,116	1,433	1,036	1,433	1,036
9	BMJ	-1,712	-1,444	-1,712	-1,377	-1,712	-1,377
10	BRC	0,891	0,679	0,774	0,544	1,004	0,706
11	BVG	0,293	0,121	0,228	0,061	0,350	0,093
12	BVN	0,740	0,330	0,136	0,042	0,148	0,045
13	CAP	0,695	0,350	0,610	0,231	0,146	0,055
14	CMI	1,065	0,586	0,970	0,425	0,290	0,127
15	CPC	1,211	0,992	1,211	0,937	1,211	0,937
16	CTM	0,407	0,247	-0,767	-0,390	0,094	0,048
17	CZC	0,124	0,056	0,335	0,105	0,545	0,171
18	DAG	0,606	0,270	0,498	0,153	0,522	0,161
19	DHC	1,170	0,603	1,170	0,461	1,170	0,461
20	DHM	0,489	0,315	0,969	0,539	0,353	0,196
21	DLG	0,083	0,034	0,032	0,008	0,468	0,121
22	DNS	0,155	0,071	0,100	0,032	0,541	0,174
23	DNY	0,089	0,039	0,163	0,048	0,194	0,057
24	DPM	0,785	0,706	0,785	0,686	0,785	0,686
25	DPR	1,043	0,855	1,043	0,808	1,043	0,808
26	DTL	0,050	0,026	0,088	0,036	0,684	0,281
27	DTT	0,605	0,534	0,605	0,517	0,605	0,517
28	GER	0,842	0,546	0,336	0,188	0,412	0,231

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29	GTA	0,757	0,607	0,757	0,569	0,757	0,569
30	HAI	0,823	0,530	0,823	0,456	0,823	0,456
31	HAP	1,280	1,070	1,280	1,018	1,280	1,018
32	HGM	0,691	0,567	0,691	0,535	0,691	0,535
33	HLA	1,833	0,638	1,833	0,339	1,833	0,339
34	HLC	0,397	0,115	0,397	0,045	0,397	0,045
35	HMC	1,227	0,523	1,227	0,348	1,227	0,348
36	HPG	0,969	0,533	0,969	0,424	0,969	0,424
37	HPP	0,770	0,417	0,578	0,247	0,513	0,219
38	HRC	0,971	0,794	0,971	0,750	0,971	0,750
39	HSG	1,821	0,834	1,821	0,587	1,821	0,587
40	HSI	0,748	0,273	0,748	0,154	0,748	0,154
41	HVC	0,468	0,192	0,186	0,049	0,148	0,039
42	HVT	0,238	0,132	0,238	0,105	0,238	0,105
43	KHB	0,561	0,509	0,262	0,231	1,636	1,445
44	KKC	1,717	1,031	1,717	0,860	1,717	0,860
45	KMT	1,259	0,561	1,259	0,386	1,259	0,386
46	KSA	0,946	0,656	1,044	0,644	0,803	0,496
47	KSB	1,103	0,784	1,103	0,705	1,103	0,705
48	KSH	1,766	1,283	1,766	1,162	1,766	1,162
49	KSS	2,089	1,257	2,089	1,049	2,089	1,049
50	KTB	0,510	0,410	1,052	0,793	0,442	0,333
51	LAS	0,607	0,309	0,017	0,006	0,654	0,254
52	LCM	0,555	0,546	0,259	0,254	0,145	0,142
53	MAX	0,098	0,072	0,729	0,486	0,340	0,226
54	MDC	0,546	0,210	0,546	0,126	0,546	0,126
55	MDF	0,140	0,123	0,950	0,804	1,019	0,863
56	MHL	0,482	0,298	0,482	0,252	0,482	0,252
57	MIC	1,417	1,005	1,417	0,902	1,417	0,902
58	MIH	0,108	0,042	0,243	0,056	0,147	0,034
59	MIM	0,566	0,322	0,283	0,130	0,199	0,092
60	MMC	1,183	1,029	1,183	0,990	1,183	0,990
61	NBC	1,129	0,444	1,129	0,273	1,129	0,273
62	NKG	0,022	0,008	0,027	0,006	0,399	0,086
63	NSP	0,886	0,805	0,801	0,710	0,913	0,809
64	NVC	0,353	0,111	0,353	0,050	0,353	0,050
65	PHR	0,471	0,309	0,471	0,268	0,471	0,268
66	PHT	0,912	0,564	0,912	0,477	0,912	0,477
67	PLC	1,338	0,626	1,338	0,448	1,338	0,448
68	POM	0,213	0,101	0,851	0,293	0,178	0,061

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69	PTK	1,452	1,128	0,101	0,073	1,433	1,033
70	RDP	0,827	0,407	0,827	0,303	0,827	0,303
71	SHA	1,027	0,525	0,125	0,048	0,908	0,353
72	SHI	1,550	0,691	1,550	0,476	1,550	0,476
73	SMC	1,142	0,442	1,142	0,266	1,142	0,266
74	SPC	0,165	0,064	0,325	0,077	0,036	0,009
75	SQC	0,174	0,154	0,174	0,148	0,174	0,148
76	SSM	1,402	0,848	1,402	0,710	1,402	0,710
77	TC6	0,678	0,237	0,678	0,127	0,678	0,127
78	TCS	0,900	0,302	0,900	0,152	0,900	0,152
79	TDN	0,587	0,219	0,587	0,127	0,587	0,127
80	TDS	0,516	0,255	0,160	0,059	0,449	0,165
81	THT	0,927	0,421	0,927	0,294	0,927	0,294
82	TIS	0,389	0,165	0,717	0,201	0,381	0,107
83	TLH	0,379	0,219	0,406	0,192	0,944	0,446
84	TNB	0,105	0,084	0,948	0,713	1,051	0,790
85	TNC	0,949	0,867	0,949	0,846	0,949	0,846
86	TNT	1,152	0,894	1,137	0,818	0,769	0,554
87	TPC	1,062	0,637	1,062	0,531	1,062	0,531
88	TPP	1,100	0,476	1,100	0,321	1,100	0,321
89	TRC	1,185	0,970	1,185	0,917	1,185	0,917
90	TSC	0,928	0,349	0,928	0,204	0,928	0,204
91	TTF	1,576	0,629	1,576	0,392	1,576	0,392
92	TVD	0,463	0,151	0,096	0,015	0,372	0,058
93	VCA	0,358	0,131	0,098	0,020	0,106	0,022
94	VDT	0,780	0,462	0,493	0,242	1,008	0,494
95	VFG	0,350	0,215	0,350	0,181	0,350	0,181
96	VGS	1,907	1,037	1,907	0,820	1,907	0,820
97	VID	0,757	0,369	0,757	0,272	0,757	0,272
98	VIS	1,289	0,658	1,289	0,500	1,289	0,500
99	VKP	0,877	0,280	0,877	0,131	0,877	0,131

All three above tables and data show that values of equity and asset beta in the case of increasing leverage up to 30% or decreasing leverage degree down to 20% have certain fluctuation.

8. **Comparing statistical results in 3 scenarios of changing leverage:**

Table 5 - Statistical results (FL in case 1) (source: VN stock exchange 2012)

	Competitor size as current			**Competitor size slightly smaller**			**Competitor size double**		
Statistic results	**Equity beta**	**Asset beta (assume debt beta =**	**Difference**	**Equity beta**	**Asset beta (assume**	**Difference**	**Equity beta**	**Asset beta (assume**	**Difference**

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		0)			**debt beta = 0)**			**debt beta = 0)**	
MAX	1,153	0,981	0,173	2,089	1,162	0,927	2,089	1,382	0,707
MIN	0,026	-1,276	1,302	-1,712	-1,377	-0,335	-1,712	-1,377	-0,335
MEAN	0,663	0,244	0,419	0,684	0,338	0,347	0,736	0,368	0,369
VAR	0,0895	0,1112	-0,022	0,3640	0,1364	0,228	0,3142	0,1348	0,179
Note: Sample size : 99 firms									

Table 6 – Statistical results (FL in case 2) (source: VN stock exchange 2012)

	Competitor size as current			**Competitor size slightly smaller**			**Competitor size double**		
Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,089	1,162	0,927	2,089	1,162	0,927	2,089	1,419	0,669
MIN	-1,712	-1,377	-0,335	-1,712	-1,377	-0,335	-1,712	-1,377	-0,335
MEAN	0,747	0,371	0,375	0,707	0,350	0,358	0,763	0,381	0,382
VAR	0,3030	0,1246	0,178	0,3618	0,1389	0,223	0,3027	0,1348	0,168
Note: Sample size : 99 firms									

Table 7- Statistical results (FL in case 3) (source: VN stock exchange 2012)

	Competitor size as current			**Competitor size slightly smaller**			**Competitor size double**		
Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,089	1,283	0,806	2,089	1,162	0,927	2,089	1,445	0,643
MIN	-1,712	-1,444	-0,268	-1,712	-1,377	-0,335	-1,712	-1,377	-0,335
MEAN	0,786	0,468	0,318	0,728	0,360	0,368	0,786	0,392	0,394
VAR	0,286	0,1393	0,147	0,3605	0,1413	0,219	0,2931	0,1348	0,158

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	1								
Note: Sample size : 99 firms									

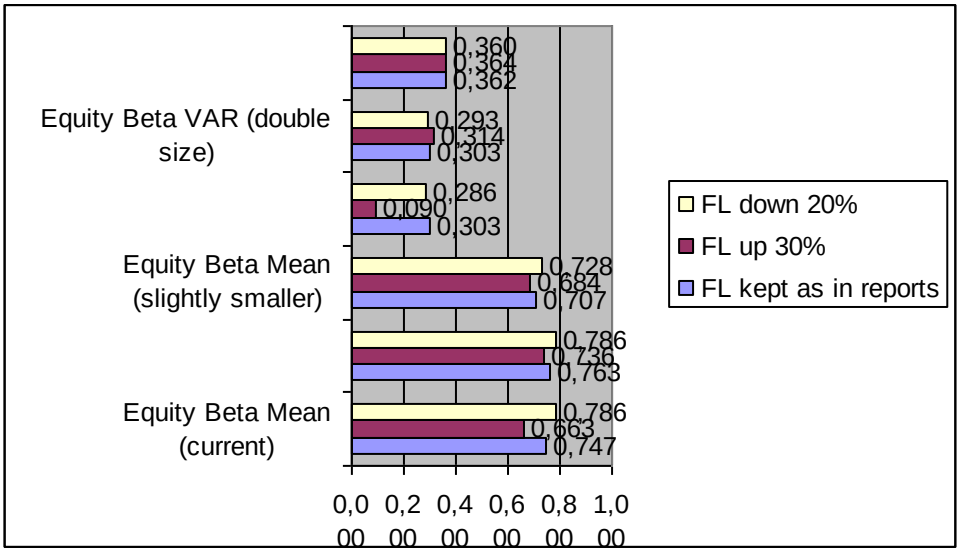
Based on the calculated results, we find out:

First of all, if competitor size is kept as current, both max and min values of equity and asset beta vary in 3 cases (max values increasing to 1,162 and 1,283 when leverage up 30% and down 20%). Secondly, if competitor size is chosen with total asset doubling, max values of asset beta vary in all 3 scenarios. Thirdly, if competitor is chosen with total asset slightly smaller, there is no changes in min values of equity and asset beta in the case of leverage up 30% (in the case of leverage down 20% (increasing from -1,444 to -1,377).

Furthermore, the below chart 1 shows us : in the case of doubling competitor size, the risk is less dispersed. Especially, if leverage down to 20%, equity beta var reduces to 0,293. On the contrary, in the case of slightly smaller size competitors, if leverage up to 30%, equity beta var increases to 0,364.

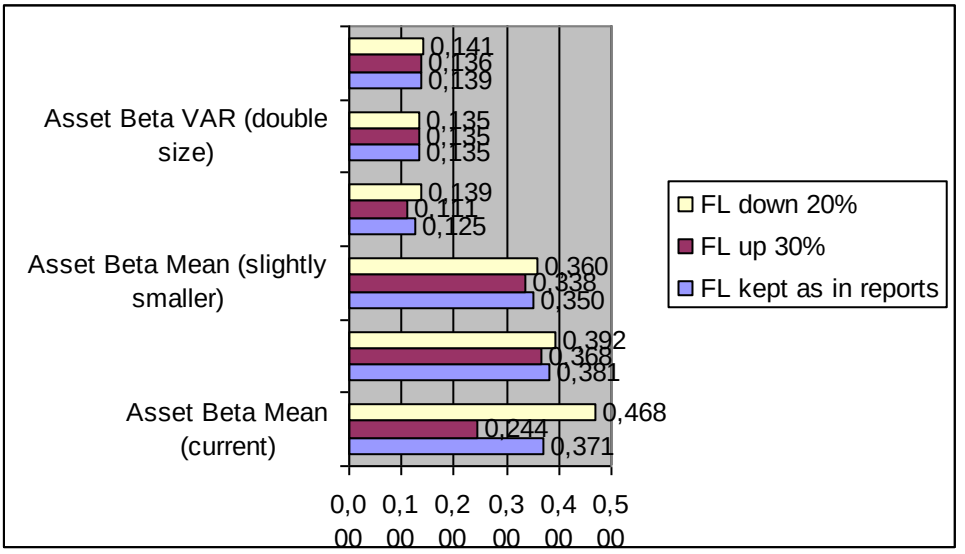
Last but not least, from chart 2, we could note that in the case of slightly smaller size competitors, keeping the current leverage degree, asset beta mean value reduces to 0,350. On the other hand, in the case of doubling size competitors, asset beta mean value goes up to 0,381.

Chart 1 – Comparing statistical results of equity beta var and mean in three (3) scenarios of changing FL and competitor size (source: VN stock exchange 2012)



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Chart 2 – Comparing statistical results of asset beta var and mean in three (3) scenarios of changing FL and competitor size (source: VN stock exchange 2012)



9. Conclusion and Policy suggestion

In general, the government has to consider the impacts on the mobility of capital in the markets when it changes the macro policies and the legal system and regulation for developing the wholesale and retail market. The Ministry of Finance continues to increase the effectiveness of fiscal policies and tax policies which are needed to combine with other macro policies at the same time. The State Bank of Viet Nam continues to increase the effectiveness of capital providing channels for manufacturing material companies. Furthermore, the entire efforts among many different government bodies need to be coordinated.

Last but not least, these companies might be aware of a minimum value of asset beta mean of 0,368 with doubling size competitors and a maximum value of asset beta mean of 0,468 with approximate size competitors. The riskier the marketing strategy, the lower the market risk.

Finally, this paper suggests implications for further research and policy suggestion for the Viet Nam government and relevant organizations, economists and investors from current market conditions.

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Exhibit

Exhibit 1- VNI Index and other stock market index during crisis 2006-2010 (source: global stock exchange 2012)

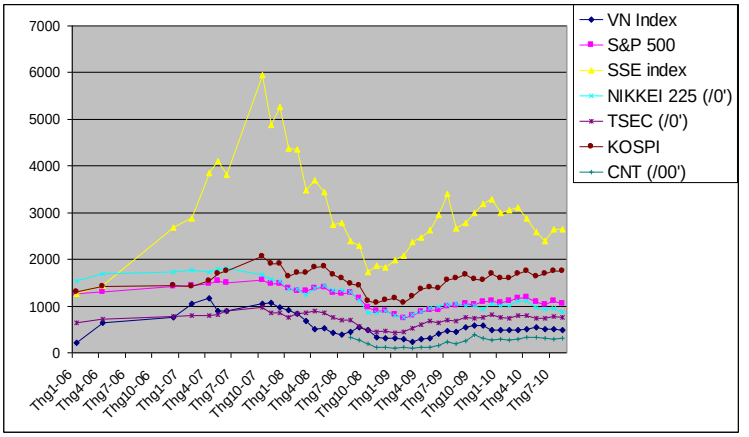


Exhibit 2 – Inflation, GDP growth and macroeconomics factors
(source: Viet Nam commercial banks and economic statistical bureau)

Year	Inflation	GDP	USD/VND rate
2011	18%	5,89%	20.670
2010	11,75% (Estimated at Dec 2010)	6,5% (expected)	19.495
2009	6,88%	5,2%	17.000
2008	22%	6,23%	17.700
2007	12,63%	8,44%	16.132
2006	6,6%	8,17%	
2005	8,4%		
Note	approximately		

Exhibit 3 – Financial leverage in three (3) scenarios with different competitors
(source: Viet Nam commercial banks and economic statistical bureau)

Order No.	**Company Stock code**	**FL as current**	**FL up 30%**	**FL down 20%**
1	COM	17,3%	28,2%	17,3%
2	AAA	43,1%	70,1%	43,1%

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3	ALV	24,5%	39,7%	24,5%
4	AMC	33,9%	55,0%	33,9%
5	APP	32,5%	52,9%	32,5%
6	BGM	5,3%	8,6%	5,3%
7	BKC	24,6%	39,9%	24,6%
8	BMC	22,1%	36,0%	22,1%
9	BMJ	15,7%	25,5%	15,7%
10	BRC	23,8%	38,6%	23,8%
11	BVG	58,7%	95,4%	58,7%
12	BVN	55,5%	90,2%	55,5%
13	CAP	49,7%	80,8%	49,7%
14	CMI	44,9%	73,0%	44,9%
15	CPC	18,1%	29,4%	18,1%
16	CTM	39,4%	64,0%	39,4%
17	CZC	54,9%	89,2%	54,9%
18	DAG	55,4%	90,0%	55,4%
19	DHC	48,5%	78,8%	48,5%
20	DHM	35,5%	57,7%	35,5%
21	DLG	59,3%	96,4%	59,3%
22	DNS	54,3%	88,2%	54,3%
23	DNY	56,4%	91,6%	56,4%
24	DPM	10,0%	16,3%	10,0%
25	DPR	18,0%	29,3%	18,0%
26	DTL	47,2%	76,6%	47,2%
27	DTT	11,6%	18,9%	11,6%
28	GER	35,1%	57,0%	35,1%
29	GTA	19,9%	32,3%	19,9%
30	HAI	35,7%	57,9%	35,7%
31	HAP	16,4%	26,6%	16,4%
32	HGM	18,0%	29,2%	18,0%
33	HLA	65,2%	105,9%	65,2%
34	HLC	71,0%	115,3%	71,0%
35	HMC	57,3%	93,2%	57,3%
36	HPG	45,0%	73,1%	45,0%
37	HPP	45,9%	74,5%	45,9%
38	HRC	18,2%	29,6%	18,2%
39	HSG	54,2%	88,1%	54,2%
40	HSI	63,6%	103,3%	63,6%
41	HVC	58,9%	95,7%	58,9%
42	HVT	44,6%	72,5%	44,6%

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43	KHB	9,3%	15,2%	9,3%
44	KKC	39,9%	64,9%	39,9%
45	KMT	55,4%	90,1%	55,4%
46	KSA	30,6%	49,8%	30,6%
47	KSB	28,9%	46,9%	28,9%
48	KSH	27,4%	44,5%	27,4%
49	KSS	39,8%	64,7%	39,8%
50	KTB	19,7%	32,0%	19,7%
51	LAS	49,0%	79,6%	49,0%
52	LCM	1,6%	2,6%	1,6%
53	MAX	26,7%	43,4%	26,7%
54	MDC	61,6%	100,1%	61,6%
55	MDF	12,2%	19,9%	12,2%
56	MHL	38,1%	61,9%	38,1%
57	MIC	29,1%	47,3%	29,1%
58	MIH	61,6%	100,1%	61,6%
59	MIM	43,2%	70,2%	43,2%
60	MMC	13,1%	21,3%	13,1%
61	NBC	60,7%	98,6%	60,7%
62	NKG	62,8%	102,1%	62,8%
63	NSP	9,1%	14,8%	9,1%
64	NVC	68,6%	111,5%	68,6%
65	PHR	34,5%	56,0%	34,5%
66	PHT	38,2%	62,1%	38,2%
67	PLC	53,2%	86,4%	53,2%
68	POM	52,4%	85,2%	52,4%
69	PTK	22,3%	36,3%	22,3%
70	RDP	50,7%	82,4%	50,7%
71	SHA	48,9%	79,5%	48,9%
72	SHI	55,4%	90,1%	55,4%
73	SMC	61,3%	99,7%	61,3%
74	SPC	61,0%	99,1%	61,0%
75	SQC	11,9%	19,4%	11,9%
76	SSM	39,5%	64,2%	39,5%
77	TC6	65,0%	105,7%	65,0%
78	TCS	66,5%	108,0%	66,5%
79	TDN	62,7%	101,9%	62,7%
80	TDS	50,6%	82,2%	50,6%
81	THT	54,6%	88,8%	54,6%
82	TIS	57,6%	93,6%	57,6%

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83	TLH	42,2%	68,6%	42,2%
84	TNB	19,9%	32,3%	19,9%
85	TNC	8,7%	14,1%	8,7%
86	TNT	22,4%	36,4%	22,4%
87	TPC	40,0%	65,0%	40,0%
88	TPP	56,7%	92,1%	56,7%
89	TRC	18,1%	29,4%	18,1%
90	TSC	62,4%	101,4%	62,4%
91	TTF	60,1%	97,6%	60,1%
92	TVD	67,5%	109,7%	67,5%
93	VCA	63,5%	103,2%	63,5%
94	VDT	40,8%	66,3%	40,8%
95	VFG	38,6%	62,7%	38,6%
96	VGS	45,6%	74,1%	45,6%
97	VID	51,2%	83,3%	51,2%
98	VIS	49,0%	79,5%	49,0%
99	VKP	68,0%	110,5%	68,0%
	Average	40,8%	66,3%	40,8%

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