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PIER Working Paper 13-045

“Montenegrin Trade Specialization Index

by

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<http://ssrn.com/abstract=2313746>

Montenegrin Trade Specialization Index

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Abstract

Montenegro, newly independent since 2006, saw its commodity exports collapse in the worldwide financial crisis of 2008. It took three years for the volume of its exports to recover. Using one to four-digit Standard Industrial Trade Classification (SITC) commodity trade data, this paper analyzes trade patterns as they evolve, both globally, and within individual product sectors, since independence to the year 2012. The Kellman – Shachmurove Trade Specialization Index (TSI) is employed to study the degree of the Montenegrin specialization. The paper warns about high degree of specialization with overreliance on commodity exports of aluminum alloys.

JEL Classifications: O1, O14, F1, F14

Key words: Trade Specialization Indices; Concentration Ratios; Herfindahl-Hirshman Index; Machinery Exports; Montenegro

Montenegrin Trade Specialization Index

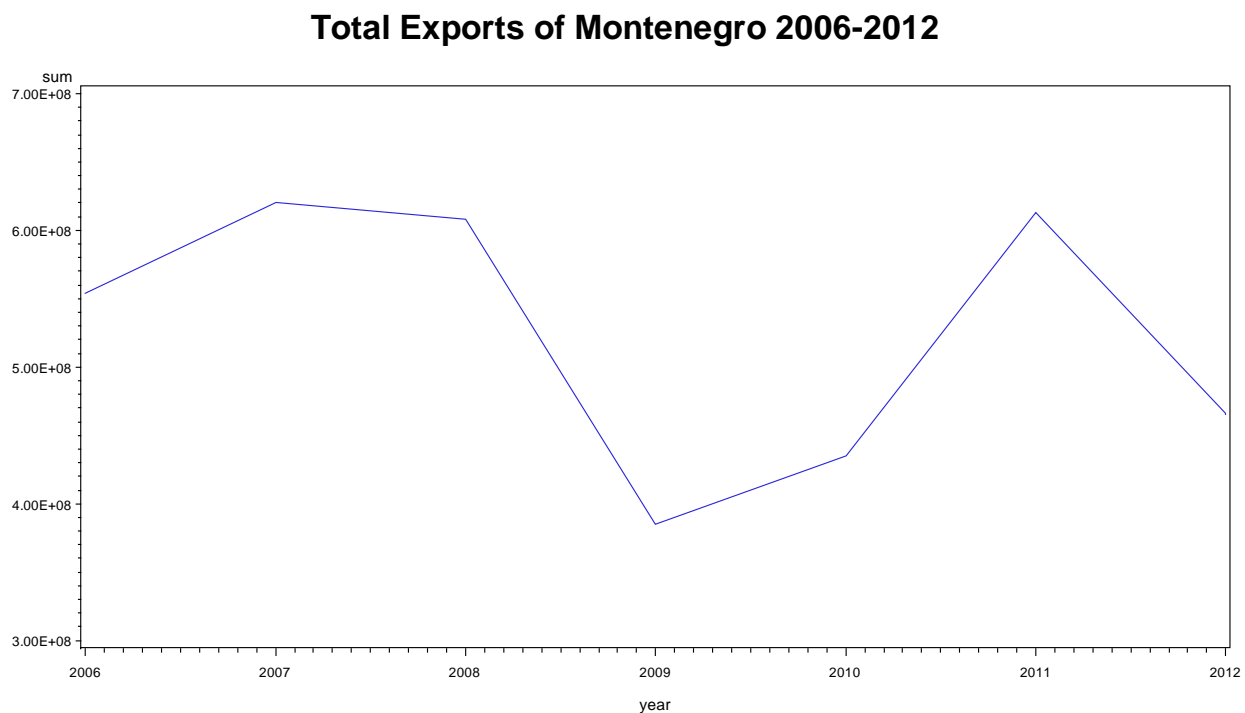
I. Introduction

After World War I, during which Montenegro fought on the side of the Allies, Montenegro was absorbed by the Kingdom of Serbs, Croats, and Slovenes, which became the Kingdom of Yugoslavia in 1929. At the conclusion of World War II, Montenegro became a constituent republic of the Socialist Federal Republic of Yugoslavia. When the Socialist Federal Republic of Yugoslavia dissolved in 1992, Montenegro federated with Serbia, first as the Federal Republic of Yugoslavia and, after 2003, in a looser State Union of Serbia and Montenegro. In May 2006, Montenegro invoked its right under the Constitutional Charter of Serbia and Montenegro to hold a referendum on independence from the State Union. The vote for severing ties with Serbia barely exceeded 55 percent - the threshold set by the European Union (EU) - allowing Montenegro to formally restore its independence on 3 June 2006 (CIA FactBook, 2013).

Montenegro, newly independent since 2006 saw its commodity exports collapse in the worldwide financial crisis of 2008. It took three years for the volume of its exports to recover (see Figure I.1). For more details on the effects of the financial crises, see the edited book by Bakker and Klingen (2012) and the papers by Buturac and Teodorovic (2012), Fabris and Mitrovic (2012), and Knollmayer, (2012A, 2012B).

During 2006 not only does the total volume of Montenegrin exports change drastically, keeping in line with world trends, but also the composition of its exports undergoes drastic shifts. The patterns of specialization likewise shift, both globally, and within individual product sectors. These will be discussed below. How were these changes affected by, and, in turn, how did they affect the overall level of economic development in Montenegro? This will be described below.

Figure I.1: Total Export of Montenegro 2006 - 2012



Source: UN Statistical Office Compustat.

The remainder of the paper is organized as follows. Section II details the specialization patterns of Montenegro's exports. Section III analyzes both overall and sectoral levels of Montenegrin export specialization. Section IV provides graphical description of temporal shifts of Montenegro exports by individual product sectors for the period 2006-2012. Section V presents the overall dollar value of Montenegrin exports at the individual product level. Section VI briefly concludes.

II. Specialization Patterns of Montenegro's Exports

Since its independence, Montenegro's trade patterns have consistently demonstrated a trend of declining specialization. This is clearly demonstrated in Table II.1 and Figure II.1. The metric Trade Specialization Index (TSI) measures the degree of specialization. For a description

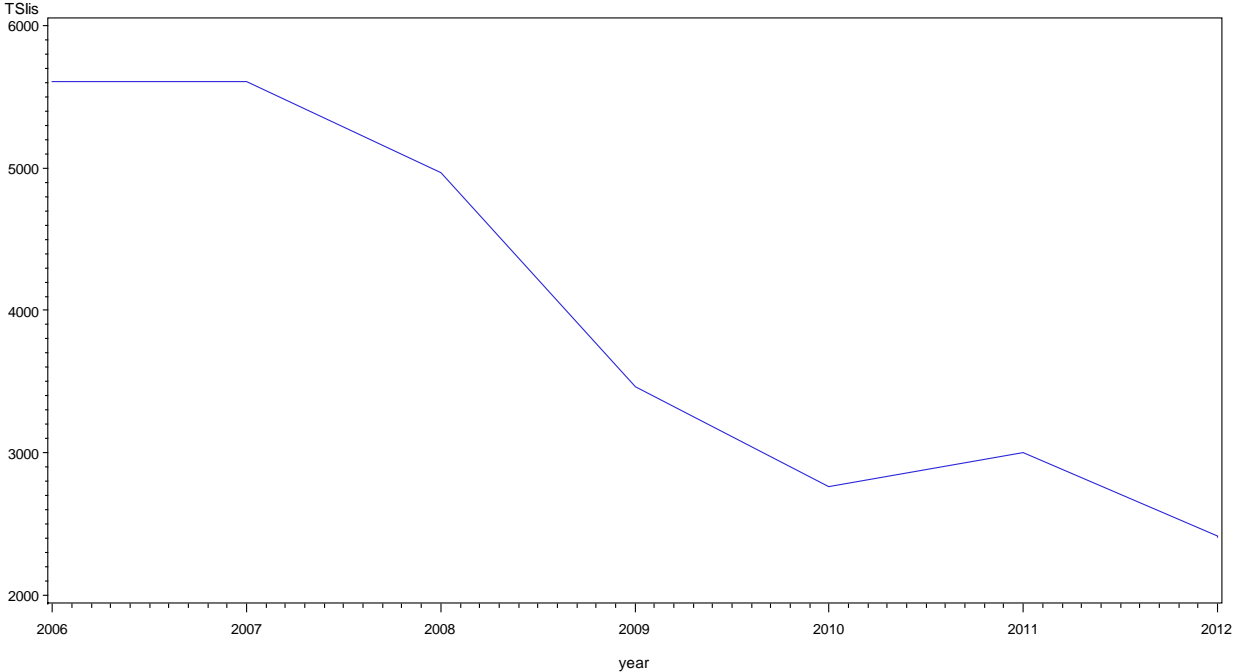
and derivation of this index, see Kellman and Shachmurove 2011 and 2012). The Trade Specialization Index (TSI) rises as the degree of specialization increases. The relationship between specialization and economic development has a long history from Adam Smith’s pin factory through the Classical and Neoclassical models, both the 2X2 models of the 18th Century and the more recent N X N models (see Kellman and Shachmurove *ibid* for a description of the literature and for the presentation of the TSI index).

Table II.1 Trade Specialization Index of Montenegro Exports

Year	Year	Year	Year	Year	Year	Year
2006	2007	2008	2009	2010	2011	2012
TSI	TSI	TSI	TSI	TSI	TSI	TSI
5604.46	5608.55	4965.12	3461.63	2761.34	3001.39	2414.65

Figure II.1

Trade Specialization Index of Montenegro Exports



Using TSI to measure the degree of specialization of Montenegro's commodity exports shows a relatively high level of 5,064 in 2006. TSI's of 5,000 or higher are typical of oil exporters such as Iran, and are rarely found in relatively highly-developed industrial (or post-industrial) countries. See Kellman and Shachmurove, 2014, forthcoming, for comparable specialization measures of several Middle East countries, which like Montenegro have been part of the Ottoman empire until the early 20th Century). During the six years since independence, Montenegrin TSI visibly trends downward. By 2012, its value was roughly one-half of its 2006 value, marking a shift from a relatively highly-specialized export composition to an increasingly diversified set of products exported.

The following Section III examines the export compositions of the entire set of Montenegrin exports, as well as at a lower level of aggregation of product definition for various exported product sectors. This enables us to determine the extent to which the observed growing diversification of the country's export diversification marks a shift from more to less specialized product sectors, or to intra-sectorial systematic declines of intra-sectorial specialization levels (see Chow, Kellman and Shachmurove, 1994, 1999).

III. Overall, and Individual Sectoral Levels of Montenegrin Export Specialization

Table III.1 below indicates the percent distribution of commodity exports of Montenegrin exports for each year from 2006 to 2012. The table is organized by Product Groupings defined at the single digit Standard Industrial Trade Classification (SITC). Included are all those exports that are classified (that is, including SITC 0 through 8, but excluding the non-classified products of SITC 9). The first group in the table "Food and Animals" is SITC 0, "Chemicals" is SITC 5 etc. Generally, the product categories are organized by the level of sophistication, from homogenous basic primary products to increasingly complex diversified and sophisticated

manufactures of SITC 7, and part of SITC 8, that includes scientific and medical instrumentation.

In 2006, the largest single product-group is *Basic Manufactures* (SITC 6). These include products, generally undifferentiated, that are generally defined by the raw material content, such as products of iron and products of rubber, as well as non-ferrous metal alloys. The next largest category is *Crude Materials* (SITC 2). These two categories account for close to 80% of all commodity exports of Montenegro in 2006.

Clearly, the shift to greater diversification, noted in Section I above, reflects the shift away from *Basic Manufactures* that accounted for three quarters of all exports in 2006.. By 2012, this amount fell to 42%. Which product groups took up the slack? In other words, the shift of declining specialization must *ipso facto* indicate a growing relative weight of some other product sectors other than SITC 6. Where was this growing revealed specialization? Table III.3 indicates that the dominance of the single product-group *Basic Manufactures* was largely replaced by a shift to the relatively more sophisticated SITC 7 (*Machinery and Transport Equipment*). This critical export sector (see Lipsey (1971), Kravis and Lipsey (1982), and Kellman and Shachmurove, 2011, 2012) constitutes 5% of all exports in 2006, and roughly 10% by 2009.

The pattern of change in Montenegro's specialization is not merely as simple as described above. Clearly, there is evidence of a shift up the spectrum from *Basic Manufactures* (SITC 6) to the more highly-sophisticated *Machinery* (SITC 7). However, at the same time there was a clear shift down the spectrum to *Crude Materials* (SITC 2). This product group includes exports such as leather and scrap metal. This involves a lower degree of value added from the original "gifts of nature" than most of those included in SITC 6. Thus, "diversification" is a *bon*

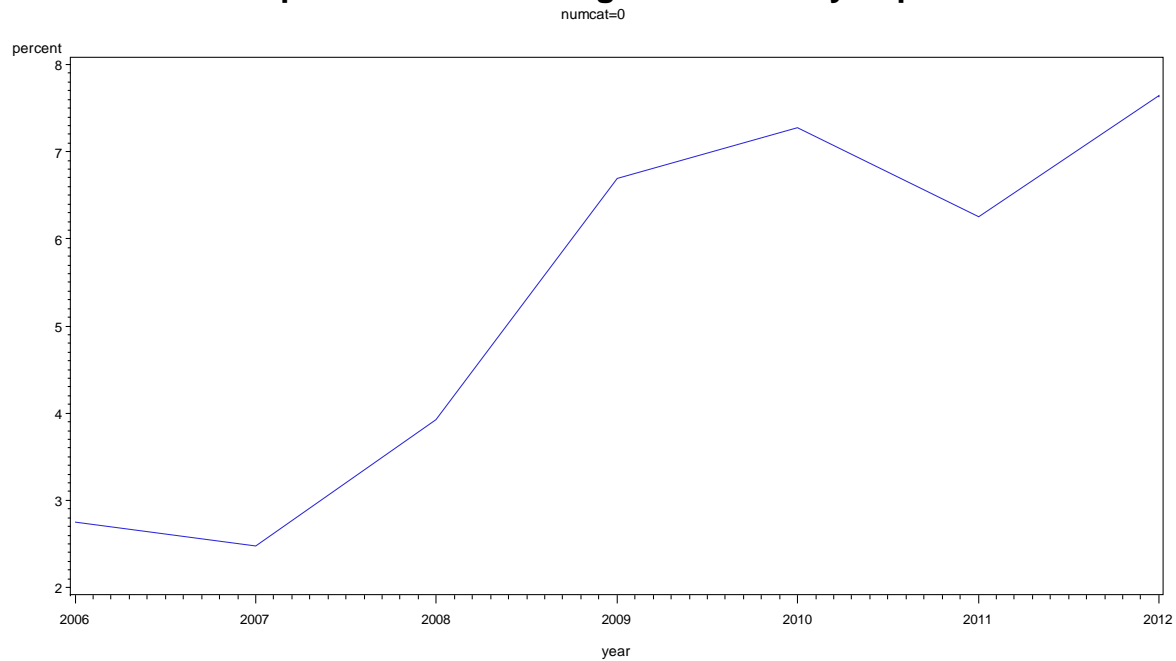
mot that aptly describes the shift in Montenegro's revealed international competitiveness. Section V below examines these patterns at a more detailed, disaggregated product level.

Table III.1: Composition of Montenegro Commodity Exports

Year	2006	2007	2008	2009	2010	2011	2012
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Product Sectors							
Food and Animals	2.75	2.48	3.92	6.69	7.27	6.26	7.64
Tobacco and Beverages	5.56	5.75	6	7.91	6.42	5.23	7.02
Crude Materials	8.21	8.6	7.97	9.13	13.6	14.56	15.48
Mineral Fuels	0.83	1.75	3.05	3.05	10.12	14.28	13.91
Animal Based Products	0.07	0.02	0.05	0.11	0.39	0.33	0.9
Chemicals	2.36	2.16	2.59	4.29	3.92	2.73	3.29
Basic Manufactures	73.93	73.98	69.29	55.98	47.88	49.8	42.51
Machinery	5.05	3.36	5.54	10.07	8.21	5.42	7.1
Misc Manufactures	1.23	1.9	1.59	2.77	2.2	1.4	2.15

IV. Graphical Description of Temporal Shifts of Montenegro Exports by Individual Product Sectors

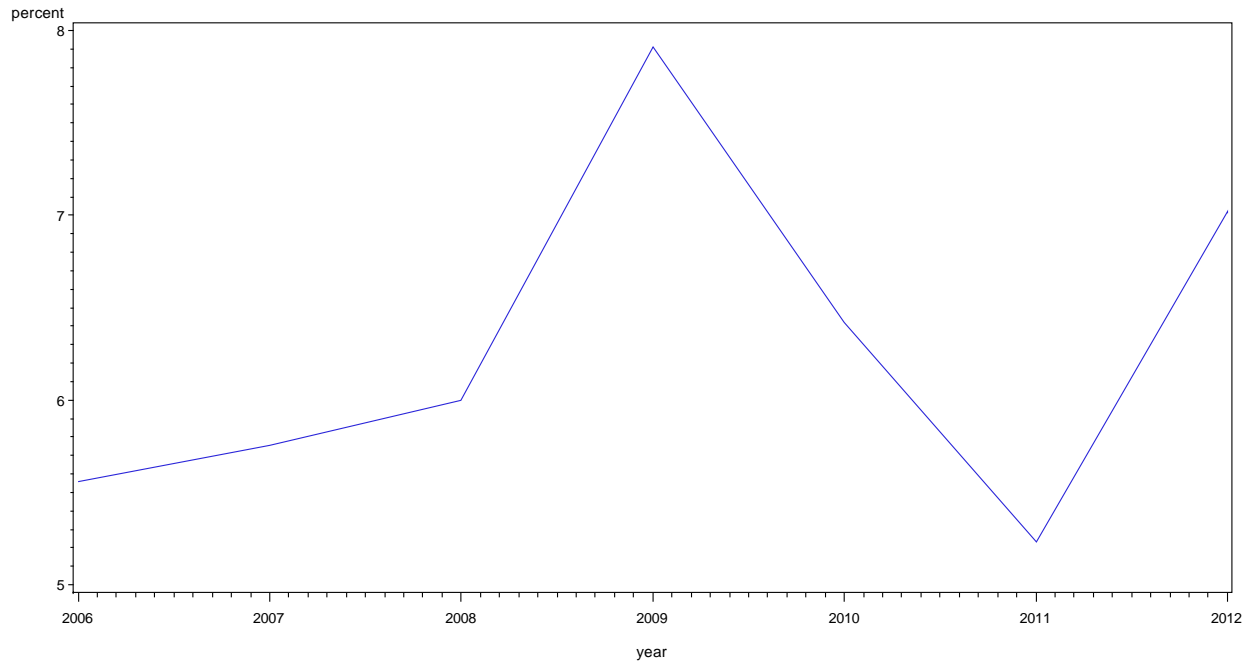
Composition of Montenegro Commodity Exports



As noted above, over the period studied, 2006 to 2012, Montenegro's export pattern becomes less specialized. Note that the percentage of all commodity exports accounted for by SITC 0, *Food and Live Animals*, increases from 2.75% in 2006 to 7.64% in 2012.

Composition of Montenegro Commodity Exports

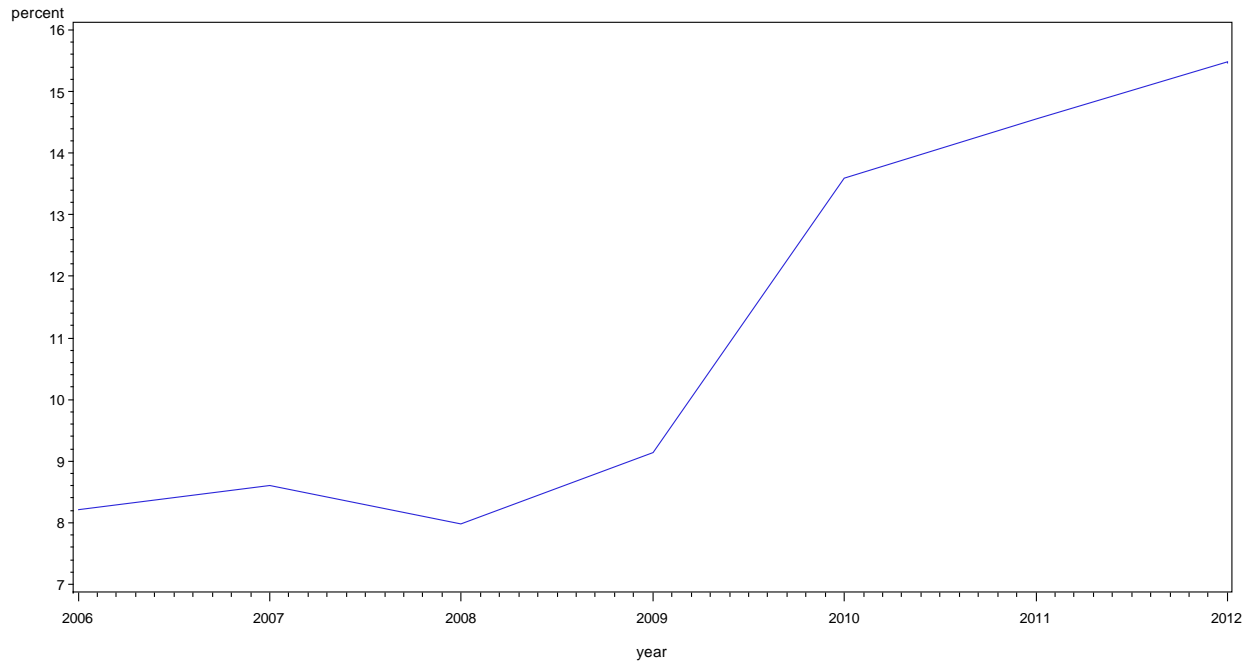
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SITC 1 *Tobacco and Beverages* is a small portion of Montenegro's exports in 2006, and remains at roughly the same relative level over the period examined.

Composition of Montenegro Commodity Exports

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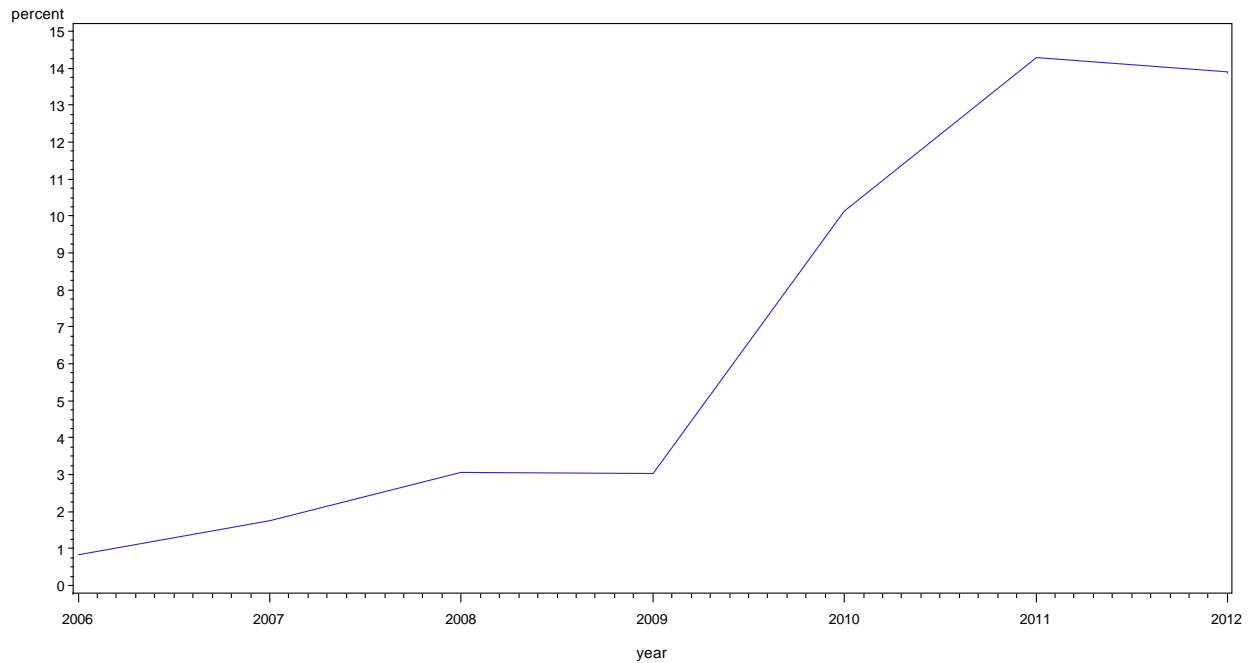


As noted above, SITC 2, *Crude Materials*, while constituting a small percentage (less than 9%)

of all commodity exports in 2006, increases steadily over the period and roughly doubles its relative weight by 2012.

Composition of Montenegro Commodity Exports

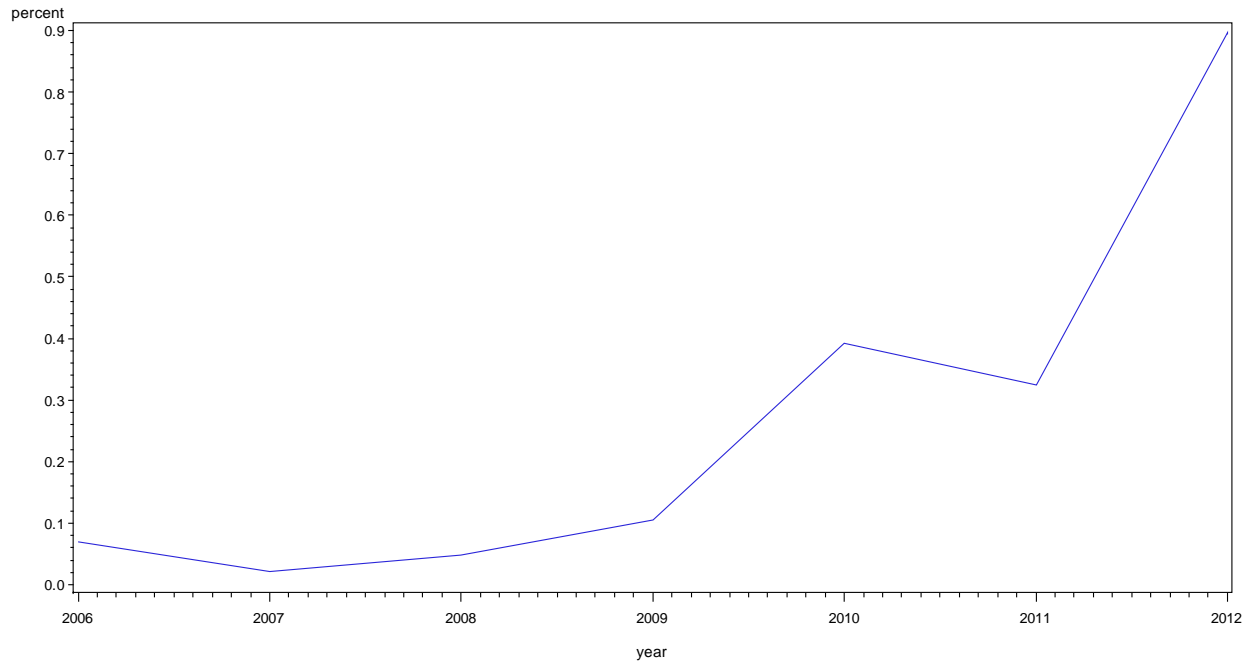
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SITC3 *Mineral Fuels* shows the greatest relative growth in relative weight. While constituting less than 1% of all exports in 2006, it contributes roughly 14% of all exports in 2012.

Composition of Montenegro Commodity Exports

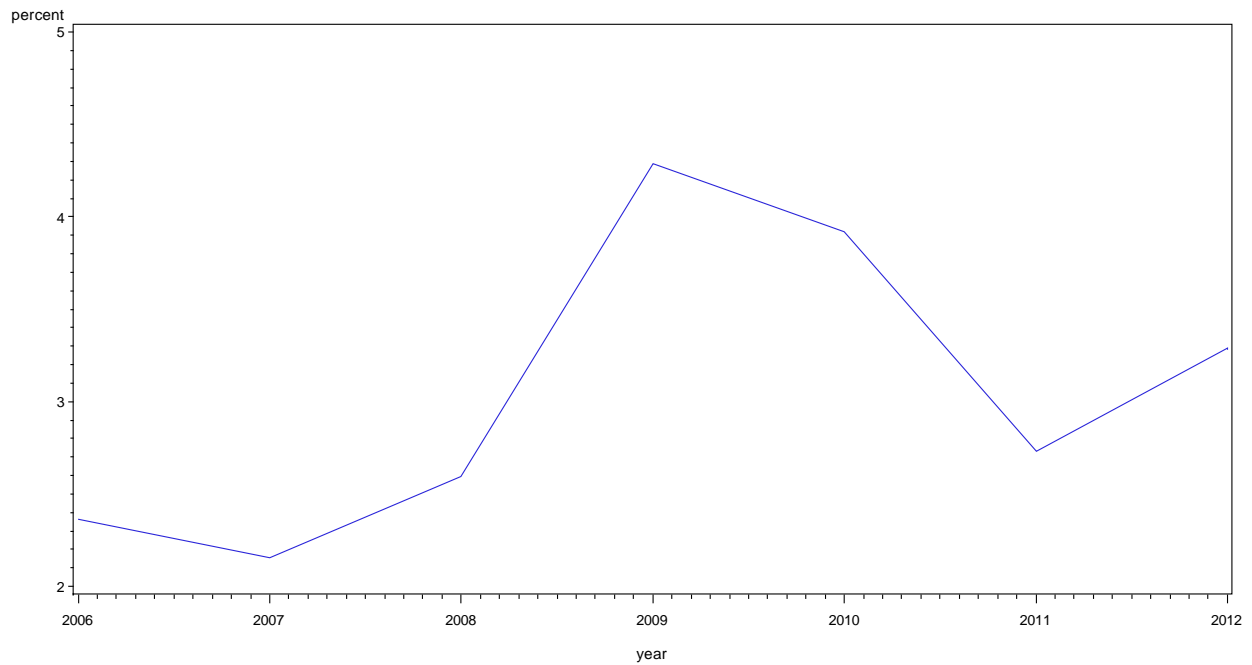
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SITC 4 *Animal Based Products* was and remained a miniscule portion of all exports, never reaching even 1% of all commodity exports.

Composition of Montenegro Commodity Exports

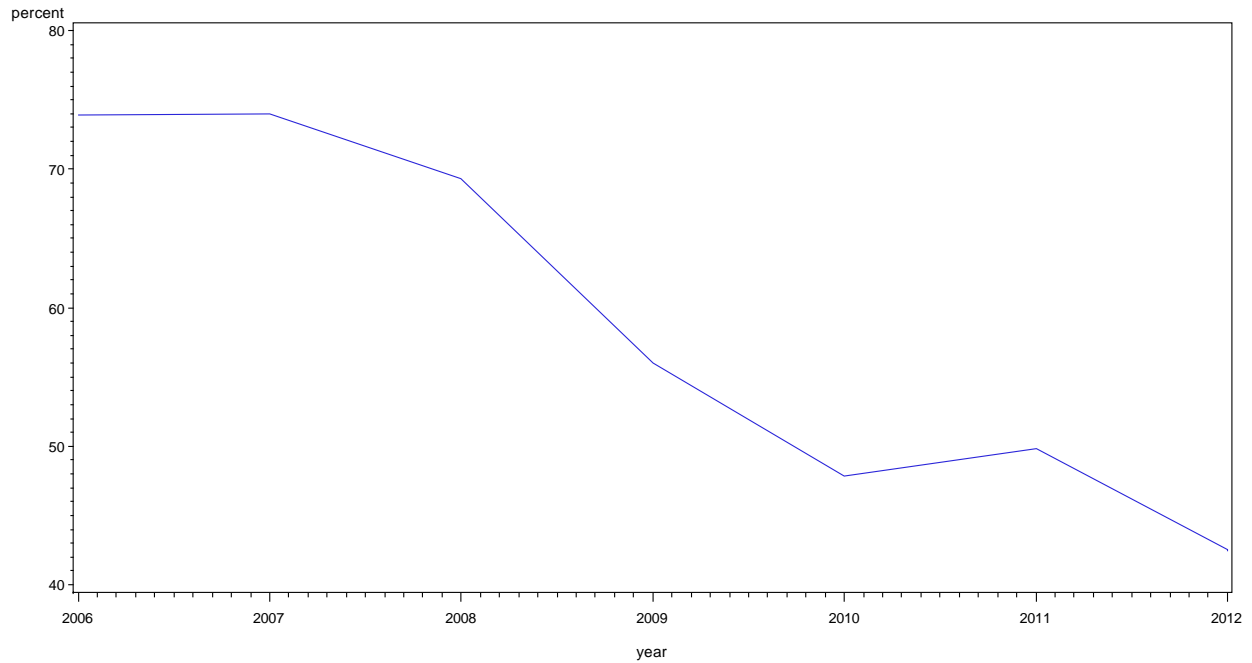
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SITC 5 *Chemicals* fluctuates between 2 – 4%, maintaining a relatively miniscule proportion of all exports.

Composition of Montenegro Commodity Exports

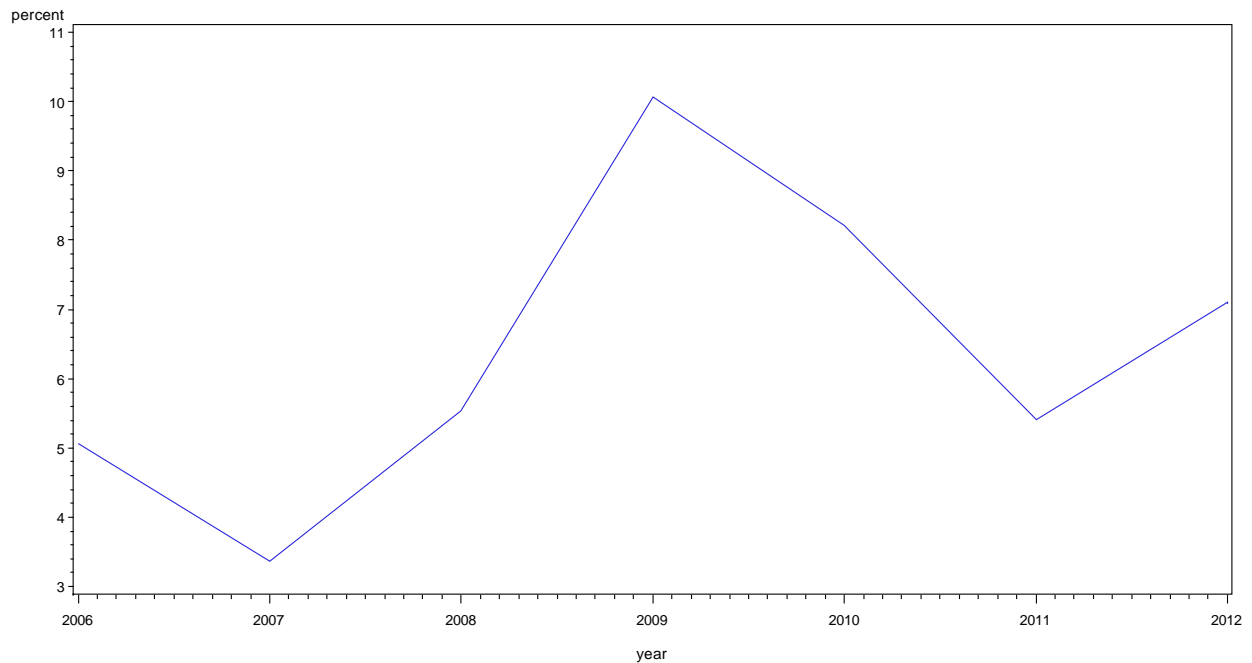
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SITC 6 *Basic Manufactures* was the dominant export group throughout the period studied. In 2006 it constitutes $\frac{3}{4}$ of all Montenegro's exports, and continually dropped to a lower, but still relatively high percent, somewhat less than $\frac{1}{2}$ of all exports.

Composition of Montenegro Commodity Exports

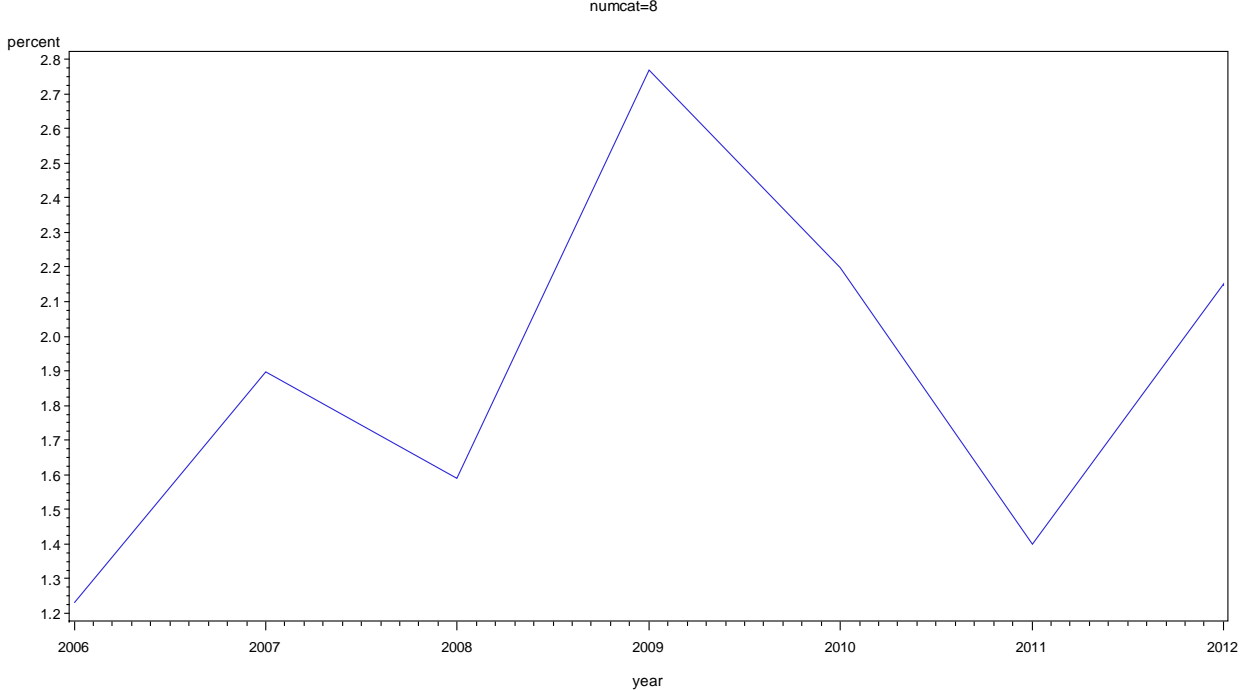
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SITC 7 *Machinery and Transport Equipment* rapidly rose from 5% to 10% of all exports from

2006 to 2009. As the volume of all exports rose following the great financial crises of 2008, the percentage of Machinery in all exports trended generally downward, ending at around 7% of all exports in 2012.

Composition of Montenegro Commodity Exports



SITC 8 *Miscellaneous Manufactures* remains relatively unimportant, ranging from approximately 1% to a high less than 3% of all exports.

Intra-Sectoral Product Export Specialization 2006 – 2012

Trade Specialization Index of Montenegro Basic Manufactures Exports (SITC 6)

2006	2007	2008	2009	2010	2011	2012
TSlis	TSlis	TSlis	TSlis	TSlis	TSlis	TSlis
6169.3	5827.42	4180.85	5461.77	6878.83	6964.87	6942.22

Composition of Montenegro Basic Manufactures Exports

	Year						
	2006	2007	2008	2009	2010	2011	2012
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Products							
Iron or Steel Bars	.	.	6.15	.	.	.	.
Steel Rods	10.37	6.86	5.36	.	.	.	.
Steel Bars	.	.	12.15	7.67	.	8.61	.
Aluminum Alloys	77.73	75.71	62.62	73.17	82.67	82.96	83.09

Trade Specialization Index of Montenegro Food and Animals Exports (SITC 0)

Year						
2006	2007	2008	2009	2010	2011	2012
TSlis	TSlis	TSlis	TSlis	TSlis	TSlis	TSlis
847.29	753.46	888.72	784.53	746.1	789.82	722.17

Composition of Montenegro Food and Animals Exports

	Year						
	2006	2007	2008	2009	2010	2011	2012
numcat	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Bacon	12.63	13.93	14.76	14.07	10.34	7	10.39
Sausages	.	.	.	.	6.1	6.69	8.7
Prepared Meat	.	9.16	13.55	13.39	.	.	.
Flour	.	.	.	7.03	.	.	6.36

Pastry	13.19	8.4	6.7	5.19	7.75	11.11	11.98
Vegetables	6.7	19.14	13.74	12.01	9.52	10.45	7.57
Dried Vegetables	6	5.66	6.78	.	.	.	.
Grapes	.	.	5.46	.	.	.	.
Fruit nes	6.38	5.92	9.75	.	8.56	6.79	8
Frozen Fruit	17.4	9.34	.	5.83	5.97	6.25	.
Chocolate	.	.	.	.	11.7	7.84	9.9
Edible Products nes	.	.	6.08	7.38	12.3	16.46	8.69

Trade Specialization Index of Montenegro Crude Materials Exports (SITC 2)

Year						
2006	2007	2008	2009	2010	2011	2012
TSIis	TSIis	TSIis	TSIis	TSIis	TSIis	TSIis
1660.94	1633.59	1530.95	1717.33	1452.62	1508.23	1336.2

Composition of Crude Materials Exports

	Year						
	2006	2007	2008	2009	2010	2011	2012
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Products							
Calf Skins	8.46	6.47	.	.	7.19	.	6.9
Logs	.	.	5.8	6.36	6.91	.	.
Wood Coniferous	29.72	26.91	23.83	33.11	19.09	15.96	14.68
Wood nes	10.51	12.96	8.1	9.98	6.63	5.52	5.83
Ferrous Scrap Metal	.	8.14	9.7	11.05	16.63	27.94	22.24
Alumina	7.58	7.23	10.97	.	.	5.14	.
Zinc Ores	.	.	.	.	.	5.42	7.66
Non-Ferrous Scrap	22.03	23.28	24.4	17.05	25	18.01	20.38

The level of specialization for *Crude Materials* exceeded that of *Food and Animals*. It was composed largely of metal scrap (roughly 44% of all Sectoral exports by 2012). The major shift was from Coniferous Wood exports to Ferrous Scrap Metal exports.

**Trade Specialization Index of Montenegro Mineral Fuels Exports
(SITC 3)**

Year						
2006	2007	2008	2009	2010	2011	2012
TSlis	TSlis	TSlis	TSlis	TSlis	TSlis	TSlis
9970.53	9358.24	9002.38	9405.66	5966.21	9049.97	8752.97

Composition of Mineral Fuel and Energy Exports

	Year						
	2006	2007	2008	2009	2010	2011	2012
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Products							
Lignite	99.85	96.69	94.76	96.95	15.13	.	5.96
Petroleum Bitumin	.	.	.	.	9.73	.	.
Electric Current	.	.	.	.	75.12	95	93.37

Of all sectors, this is the most highly Specialized (or less Diversified). From 2006 – 2009, it virtually consists of only Lignite (Coal). Starting in 2010, it shifts abruptly from exports of Coal to exports of Electricity.

**Trade Specialization Index of Montenegro Machinery Exports
(SITC 7)**

Year						
2006	2007	2008	2009	2010	2011	2012
TSIis	TSIis	TSIis	TSIis	TSIis	TSIis	TSIis
975.68	964.03	737.32	1031.17	776.68	1380.06	1848.41

Composition of Montenegro Machinery Exports

	Year						
	2006	2007	2008	2009	2010	2011	2012
Products	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Excavation Machines	.	6.27	.	7.71	7.64	6.66	.
Food Processing Machinery	5.11	.	.	.	.	.	.
Machine Tools	.	.	.	25.98	.	.	.
Furnaces	.	.	.	5.4	.	.	.
Shaft or Crank	14.57	24.37	16.34	12.13	18.63	34.13	40.61
Domestic Refrigerators	12.84	14.07	7.78	6.94	9.13	6.9	.
Batteries	.	.	6.08	.	.	5.91	.
Trucks	5.95	.	5.31	.	5.72	.	.
Aircraft	.	.	.	.	7.86	.	.
Aircraft parts	.	5.21	.	.	11.13	.	8.5
Ships	22.01	7.07	.	.	.	.	.
Tugs	.	.	16.05	.	.	.	.

Exports of Machinery were characteristically not specialized in any single product category.

The relatively disaggregated and product-detailed tables in this section flesh out the Sectoral Trade Specialization Indices (TSI's). Of all nine Product sectors, only two exhibited relatively high TSI values – *Mineral Fuel and Energy* (SITC 3), and *Basic Manufactures* (SITC 6). From the tables in this section the interpretation of these high values becomes evident. In the

case of SITC 3, one single product (Lignite) accounts for close to 99% of all exports of this Product-Sector in 2006, and remains above 90% until 2010.

In the last two years, 2011 and 2012, Lignite is replaced by, again a single Product, Electric Current, that accounts for over 95% of all exports in this Product Sector. Similarly, in the case of SITC 6 – *Basic Manufactures*, the Sector’s exports are concentrated, or dominated by one single product, Aluminum Alloys, which alone constitute from between 60–80% of all Sectoral exports. With regards to the vulnerability of an economy on specific industries, see, for example, the paper by Kellman, Saadawi and Shachmurove, (1996). Hence, the high degrees of Sectoral specialization indicated by the high TSI values are indications of the virtual dominance of each of these two Product Sectors by one single (respective) Product export.

V. Overall Dollar-Values of Exports at the Individual Product Level

Table V.1 below presents a ranked detailed product description, name and dollar-value for all those products, at the 4-digit level of SITC aggregation that included at least 1% of all commodity exports for each respective year. Note that “nes” stands for Not Else Specified.

Table V.1 Top Montenegro Exports for Each Year 2006-2012

----- year=2006 -----

year	SITC	Product Description	Exports	Percent
2006	6841	Aluminum Alloys	318302345	57.4923
2006	6731	Steel Rods	42469973	7.6710
2006	1121	Wine	18792784	3.3944
2006	2482	Wood Coniferous	13522502	2.4425
2006	6732	Steel Bars	12288814	2.2196
2006	5417	Medicaments	11276559	2.0368
2006	2882	Non-Ferrous Scrap	10026076	1.8109
2006	1123	Beer	9393589	1.6967
2006	6783	Iron Pipes	9030792	1.6312
2006	6725	Iron or Steel Bars	6312775	1.1402
2006	7932	Ships	6160730	1.1128

----- year=2007 -----

year	SITC	Product Description	Exports	Percent
2007	6841	Aluminum Alloys	347347761	56.6583
2007	6731	Steel Rods	31481173	5.1351
2007	1121	Wine	23244633	3.7916
2007	6732	Steel Bars	19569076	3.1920
2007	6725	Iron or Steel Bars	18321523	2.9885
2007	6783	Iron Pipes	14806704	2.4152
2007	2482	Wood Coniferous	14347487	2.3403
2007	2882	Non-Ferrous Scrap	12415362	2.0252
2007	5417	Medicaments	9683760	1.5796
2007	1123	Beer	8876332	1.4479
2007	6724	Puddled Bars of Iron or Steel	7106083	1.1591
2007	2483	Wood nes	6910821	1.1273

----- year=2008 -----

year	SITC	Product Description	Exports	Percent
2008	6841	Aluminum Alloys	263495668	44.4873
2008	6732	Steel Bars	51108421	8.6289
2008	6725	Iron or Steel Bars	25880518	4.3695
2008	1121	Wine	25658620	4.3321
2008	6731	Steel Rods	22556758	3.8084
2008	6783	Iron Pipes	19708244	3.3274
2008	6724	Puddled Bars of Iron or Steel	19690898	3.3245
2008	5417	Medicaments	12428378	2.0983
2008	2882	Non-Ferrous Scrap	11825417	1.9965
2008	2482	Wood Coniferous	11550565	1.9501
2008	1123	Beer	7710935	1.3019

----- year=2009 -----

year	SITC	Product Description	Exports	Percent
2009	6841	Aluminum Alloys	157509753	41.9163
2009	1121	Wine	23231992	6.1825
2009	6732	Steel Bars	16511065	4.3939
2009	5417	Medicaments	12535854	3.3360
2009	2482	Wood Coniferous	11635117	3.0963
2009	7362	Machine Tools	9803076	2.6088
2009	6731	Steel Rods	8499644	2.2619
2009	6724	Puddled Bars of Iron or Steel	8293606	2.2071
2009	6725	Iron or Steel Bars	6657352	1.7716
2009	2882	Non-Ferrous Scrap	5992222	1.5946
2009	6783	Iron Pipes	4828684	1.2850
2009	7493	Shaft or Crank	4577340	1.2181
2009	3223	Lignite	4171998	1.1102
2009	1123	Beer	4091388	1.0888
2009	2820	Ferrous Scrap Metal	3883664	1.0335

----- year=2010 -----

year	SITC	Product Description	Exports	Percent
2010	6841	Aluminum Alloys	172048782	40.9338
2010	3510	Electric Current	22512732	5.3562
2010	1121	Wine	22056342	5.2476
2010	2882	Non-Ferrous Scrap	14775940	3.5155
2010	2482	Wood Coniferous	11284324	2.6848
2010	2820	Ferrous Scrap Metal	9830153	2.3388

2010	6724	Puddled Bars of Iron or Steel	9460442	2.2508
2010	5417	Medicaments	8710390	2.0724
2010	6725	Iron or Steel Bars	7473068	1.7780
2010	7493	Shaft or Crank	6631547	1.5778
2010	6732	Steel Bars	6191795	1.4731
2010	3223	Lignite	4533308	1.0786
2010	2112	Calf Skins	4246691	1.0104

----- year=2011

year	SITC	Product Description	Exports	Percent
2011	6841	Aluminum Alloys	253126305	42.4316
2011	3510	Electric Current	68221371	11.4360
2011	6732	Steel Bars	26260232	4.4020
2011	1121	Wine	25588197	4.2894
2011	2820	Ferrous Scrap Metal	24918182	4.1770
2011	2882	Non-Ferrous Scrap	16063130	2.6927
2011	2482	Wood Coniferous	14234380	2.3861
2011	7493	Shaft or Crank	11248350	1.8856
2011	5417	Medicaments	10693866	1.7926
2011	6725	Iron or Steel Bars	6599397	1.1063
2011	980	Edible Products nes	6307875	1.0574

----- year=2012 -----

year	SITC	Product Description	Exports	Percent
2012	6841	Aluminum Alloys	164612746	36.2947
2012	3510	Electric Current	49163234	10.8398
2012	1121	Wine	23231886	5.1223
2012	2820	Ferrous Scrap Metal	16043073	3.5373
2012	2882	Non-Ferrous Scrap	14698915	3.2409
2012	7493	Shaft or Crank	13337781	2.9408
2012	5417	Medicaments	12099440	2.6677
2012	2482	Wood Coniferous	10586315	2.3341
2012	6732	Steel Bars	9202995	2.0291
2012	6725	Iron or Steel Bars	5596694	1.2339
2012	2875	Zinc Ores	5526482	1.2185
2012	2112	Calf Skins	4975675	1.0970
2012	6724	Puddled Bars of Iron	4779295	1.0537

The gradual shift in the composition of Montenegrin exports may be seen in these detailed lists.

The one single largest product accounted for 57.5% of all exports in 2006, and fell steadily to 36.3% in 2012. Similarly, the top 4 products accounted for 65.2% in 2006 and declined in relative weight steadily to 47.1% in 2012.

This characteristic of a declining degree of concentration in fewer products, or what this paper previously termed a decline in the degree of specialization, is depicted graphically in Graph II.2. This phenomenon of gradually increasing variety in export composition noted in Section V is based on detailed product data analyzed at the 4-digit SITC level of aggregation, whereas the same phenomena summarized in Graph II.2 was calculated using aggregated

product-sectors, at the 1-digit SITC level. Furthermore, the metric used in the earlier part of the paper is the Trade Specialization Index, whereas that used in Section V is the top first and top fourth product level of concentration, similar to measures utilized by the Federal Trade Commission (FTC) in analyzing levels and changes in degrees of industry concentration). The TSI metric utilizes all of the information and avoids the subjectivity of choosing cut-off point for the top first and top fourth analysis.

In short, the gradual shift away from a very highly specialized export composition to one with a higher degree of representation from a wider spectrum of production levels and varieties is a robust finding, regardless of the metric chosen or the level of aggregation of the observations. This finding is supported in Section V by the constant change in the products that appear in the top 1% samples. Some, such as Beer and Ships drop out of the list, while other are newly added to the list, such as Electricity.

While the time period is perforce limited, it may be noted that this tendency to shift from a smaller universe of relatively dominant products to a wider and more varied export product composition is universally observed in the process of economic development, be it in the case of the dramatic compositional shifts that accompanied the East Asian Industrial revolution of the 1960s – 1980s, or the changes from mono-crop dependence of various African countries.

VI. Conclusion

The relatively short time period for which pertinent data are available for this relatively new country give a guardedly optimistic view of its growth and development prospects. On the one hand, Montenegro's commodity exports reveal vulnerability in its heavy dependence on a

small number of products, notably Aluminum. Another negative indicator is the failure of the economy to promote a clear shift to exports of the critical *Machinery* product group.

On the other hand, a typical correlate of economic growth is indicated in the trends revealed in the data. This is the growing degree of product diversification found at all levels of aggregation examined. It is most clearly seen in the fact that the dependence on one single product, Aluminum Alloys, consistently declined from a dependence of over half (57%) of all commodity exports in 2006 to a still relatively high, but lower level of mono-product dependency of 36% in 2012.

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