



International
Trade
Centre

ITC Trade Map Factsheet: LDC Trade Recovery in 2009

For more information:

Contact: Willem van der Geest
ITC Lead Economist
P: +41 22 730 0507
E: vandergeest@intracen.org
www.intracen.org

Contact: Christian Delachenal
Senior Market Analyst, Trade Map
P: +41 22 730 0268
E: delachenal@intracen.org
www.intracen.org

Released: January 29, 2010

ITC Trade Map Factsheet: LDC Trade Recovery in 2009

Table of Contents

1. Introduction	3
2. Global Financial Crisis and Trade Recovery	4
2.1 Economic Growth Forecasts.....	4
2.2 Aggregated Trade Performance	5
2.2.1 Value of Exports	5
2.2.2 Value of Exports	5
2.2.3 Volume of Exports.....	7
3. Disaggregated Trade Impacts	8
3.1 Among Key Partners.....	8
3.2 Among Key Sectors.....	8
3.2.1 Apparel.....	8
3.2.2 Mineral Fuels, excluding Crude Oil	10
3.2.3 Ores and Copper	11
3.2.4 Seafood	12
4. Potential Determinants of Crisis Impacts	12
4.1 WTO Membership	12
4.2 Diversification.....	13
4.2.1 Product Concentration.....	14
4.2.2 Market Concentration.....	15
4.2.3 Resilience Indicators	15
5. Conclusions	17
Annex 1 – Statistical Methodology	18
Annex 2 – Diversification Methodologies	19
Annex 3 – Export Impact and Product Diversification Tables	21

List of Figures

Figure 1: 2007-2009 Export Values from LDCs.....	4
Figure 2: LDC Real GDP Growth Rate	5
Figure 3: 2007-2009 Exports from LDCs excluding crude oil.....	7
Figure 4: Product Diversification and Export Value Performance, Q1-Q3 2008/2009	15

List of Tables

Table 1: Export Performance Excluding Crude Oil (USD Billions) (Q1-3 2007-2009).....	5
Table 2: Average Quarterly Growth of Exports.....	6
Table 3: Volume Changes for LDC Exports (2008-2009) – excluding crude oil.....	7
Table 4: Key partner imports for LDCs, 2008-2009 (Y-o-Y % Change, USD Millions) – excluding HS2709	8
Table 5: Impacts on Top Apparel Exporters/Subsectors 2008-2009.....	9
Table 6: Impacts on Top Mineral Fuels Exporters 2008-2009.....	10
Table 7: Impacts on Top Ore Exporters 2008-2009	11
Table 8: Impacts on Top Copper Exporters 2008-2009.....	11
Table 9: Impacts on Top Fish Exporters 2008-2009	12
Table 10: Simple Product and Market Concentration among select partners	13
Table 11: Sectoral Breakdown of World Imports by Sector (Excluding Crude Oil).....	16
Table 12: Export Impacts per Least Developed Country, 2008-2009.....	21

This fact sheet has been prepared by Willem van der Geest (Lead Economist), Christian Delachenal (Trade Map Manager and Senior Market Analyst), Brian Jackson (Research Associate) and Kerfalla Conte (Quantitative Analyst), of ITC's Market Analysis and Research Section, Division of Market Development.

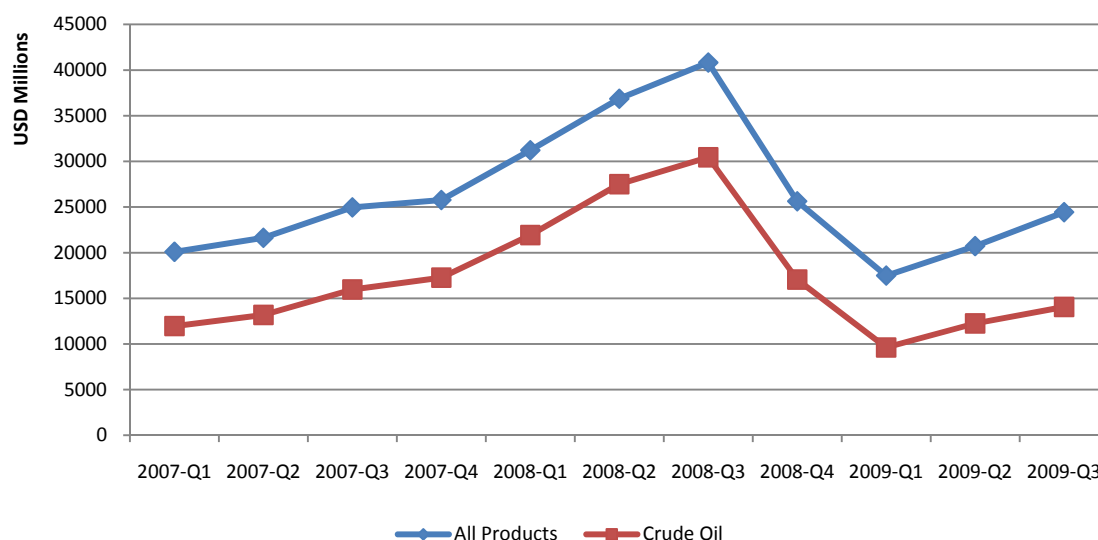
1. Introduction

In October 2009 ITC released a Trade Map Factsheet entitled “Developing Country Exports Decline in 2009”, observing export performance during the first two quarters of 2009 compared to 2008, focusing developing countries and in particular Least Developed Countries. That factsheet showed that export values from LDCs to major importing countries had declined by over 43% compared to the first half of 2008, whereas global export values had declined by over 32% during the same period. When excluding mineral fuels¹, subject to significant price volatility, it was found that LDC exports had declined by 13.5%, whereas global exports had declined by nearly 29%, highlighting the high dependence of some LDCs on crude oil exports; over the same period LLDCs’ non-mineral fuel exports declined by 37.7%. To identify changes in trade irrespective of significant price volatility, not only in energy markets but for numerous other goods such as livestock, foodstuffs, industrial inputs and textiles, changes in the volume of exports were also calculated. During the first half of 2009 the volume of LDC exports across all goods was the same as in first half of 2008. Some goods such as mineral fuels and fish experienced overall declines in volumes while others, such as ores and apparel, saw volumes grow.

As time has elapsed and more monthly and quarterly trade data have become available it is apparent that the decline, which began late in the second quarter of 2008, ended in the first quarter of 2009. Since then LDC exports have been recovering in value terms (see **Figure 1**). The present Trade Map factsheet aims to detail that recovery, in both value and volume terms, and related explanatory variables. First, there will be an overview of the extent of decline, based on ITC Trade Map data and confirmed by other, independent research efforts, followed by the extent of recovery to date. Second, trade performance in 2009 will be analyzed at a disaggregated level, focusing on the most important product groups and trade partners. Third, potential explanatory variables for varying levels of export performance during the decline and recovery will be explored. Finally, the paper will conclude with an overview of findings.

¹ HS27 is inclusive of: coal, briquettes, ovoids, etc; lignite, agglomerated or not, excluding jet; peat (including peat litter); coke etc of coal, lignite or peat, retort carbon; coal gas, water gas, other mineral tars, including reconstituted tars; oils etc from high temp coal tar; pitch & pitch coke from coal tar or other min tars; crude oil from petroleum and bituminous minerals; oil (not crude) from petrol & bitum mineral etc; petroleum gases & other gaseous hydrocarbons; petroleum jelly, mineral waxes & similar products; petroleum coke, petroleum bitumen & other residues; bitumen & asphalt, natural, shale & tar sand, etc; bit mixture from nat asph, nat bit, pet bit, min tar or pt; electrical energy

Figure 1: 2007-2009 Export Values from LDCs



Source: ITC Trade Map

Reporting Countries: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

2. Global Financial Crisis and Trade Recovery

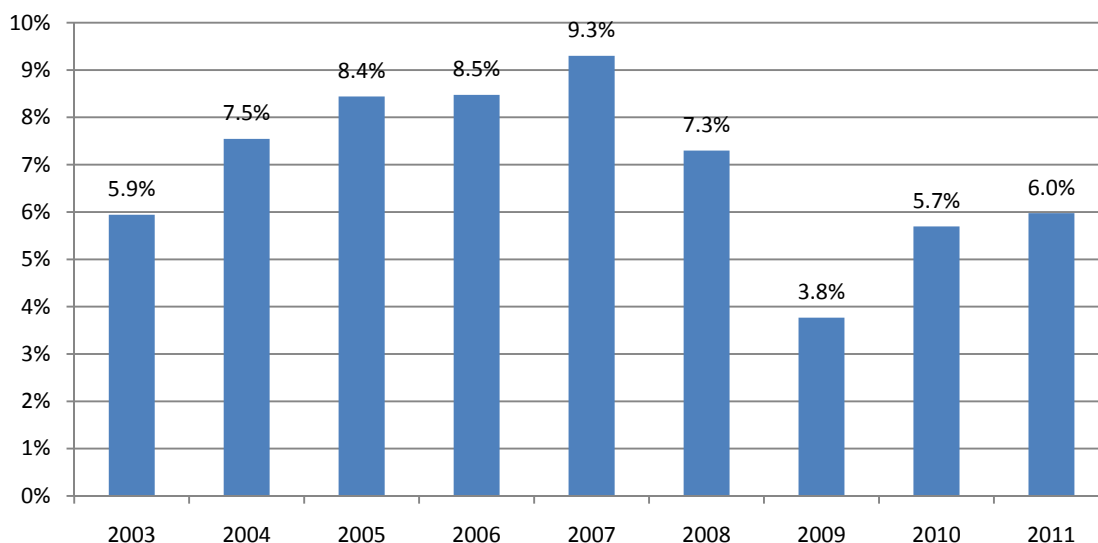
2.1 Economic Growth Forecasts

In October 2009 the IMF's World Economic Outlook found that the economic recession was ending, although sustained recovery was not a certainty. Among developed countries, which experienced a decline in real GDP of 3.5% in 2009, growth for 2010 is predicted to only reach a modest 1.25%. Emerging economies, led by China and India, are expected to grow by nearly 5% in 2010, up from 1.75% in 2009 (a significant decline in their rate of growth). The World Bank's Global Economic Prospects 2010 forecasts a stronger growth of 1.8% for the high income countries, and with China growing by 9% and India by 7.5% in 2010.² LDCs have not been spared from the decline in growth of economic output. While the group of countries as a whole experienced over 9% growth in 2007 and 7.3% growth in 2008, this rate slowed to 3.8% in 2009, and is expected to rebound to 5.7% growth in 2010 and remain at that level for several years (see **Figure 2**).

At a disaggregated level, wide variance is observed among the 49 LDC's 2009 GDP growth and 2010 recovery prospects. Oil exporters Angola, Equatorial Guinea, Sudan, Chad, Yemen, Mauritania, and DR Congo weighted real GDP growth is estimated at 1.8% in 2009, down from 8.9% in 2008 and rebounding to only 6.7% in 2010. Among oil exporters Equatorial Guinea is estimated to be hit particularly hard, with real growth at -5.4% in 2009 and -2.8% in 2010.

² Global Economic Prospects 2010, The World Bank, 21 January 2010, page 17, <http://go.worldbank.org/7N1PEVSM00>

Figure 2: LDC Real GDP Growth Rate



Source: IMF World Economic Outlook, October 2009, <https://www.imf.org/external/pubs/ft/weo/2009/02/index.htm>

Note: Weighted GDP growth is based on each LDC's actual or estimated GDP value of that year combined with the forecast real GDP growth rate. Across the 47 countries actual GDP and growth rates is provided up to 2007 or 2008; post 2007 or 2008 is as forecast by the IMF; forecasts are not provided for Somalia or Tuvalu. This includes HS2709 crude oil.

2.2 Aggregated Trade Performance

2.2.2 Value of Exports

The actual decline of export values took place primarily in the second half of 2008, with most LDC's exports hitting a trough and then growing from January or February of 2009. Due to the extent of the shock and decline in the second half of 2008, trade data for the first three quarters of 2009 reflect an overall decline in export values for LDCs relative to 2008, at a loss of USD 4 billion, or a 12% decline. This compares favorably with the 25% decline experienced by all developing countries and a 28% decline experienced in global exports (see **Table 1**).

Table 1: Export Performance Excluding Crude Oil (USD Billions) (Q1-3 2007-2009)

	Growth in Value			Growth Rate		
	2008 Q1-3	2009 Q1-3	2007-2009 Q1-3	2008 Q1-3	2009 Q1-3	2007-2009 Q1-3
LDC	6.124	(4.047)	2.077	22%	-12%	4%
LDC-WTO*	4.979	(2.408)	2.570	21%	-8%	5%
LDC non-WTO	1.183	(1.730)	(0.547)	28%	-32%	-7%
Developing	441.896	(716.974)	(275.077)	18%	-25%	-6%
World	2,340.555	(4,348.331)	(2,007.775)	17%	-28%	-8%

Source: ITC Trade Map

Reporting Countries: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

* WTO-LDC refers to LDC's with WTO member status. LDC's without member status include: Afghanistan, Bhutan, Comoros, Equatorial Guinea, Eritrea, Ethiopia, Kiribati, Lao People's Democratic Republic, Liberia, Samoa, Sao Tome and Principe, Somalia, Sudan, Timor-Leste, Tuvalu, Vanuatu, Yemen

If performance only within the period of decline is assessed, from the second quarter of 2008 to the first quarter of 2009, we find that LDCs experienced an average quarterly decline of 8% per quarter, compared to an average quarterly decline of 12% for all developing countries and 13% for the world

(see **Table 2**). LDCs' relatively more modest decline in exports (*excluding* oil) during this period may be due to LDC exports being focused on primary goods, which are less likely to be delayed for later purchases as is the case for the high-value added, manufactured goods prevalent in developed countries' (and some developing countries') exports.

Table 2: Average Quarterly Growth of Exports

	All Products		Excluding Crude Oil	
	2008Q2-2009Q1*	2009Q1-2009Q3	2008Q2-2009Q1	2009Q1-2009Q3
LDC	-22%	18%	-8%	14%
LDC-WTO	-19%	17%	-6%	15%
LDC non-WTO	-31%	25%	-20%	8%
Developing Countries	-15%	12%	-12%	10%
World	-14%	8%	-13%	7%

Source: ITC Trade Map

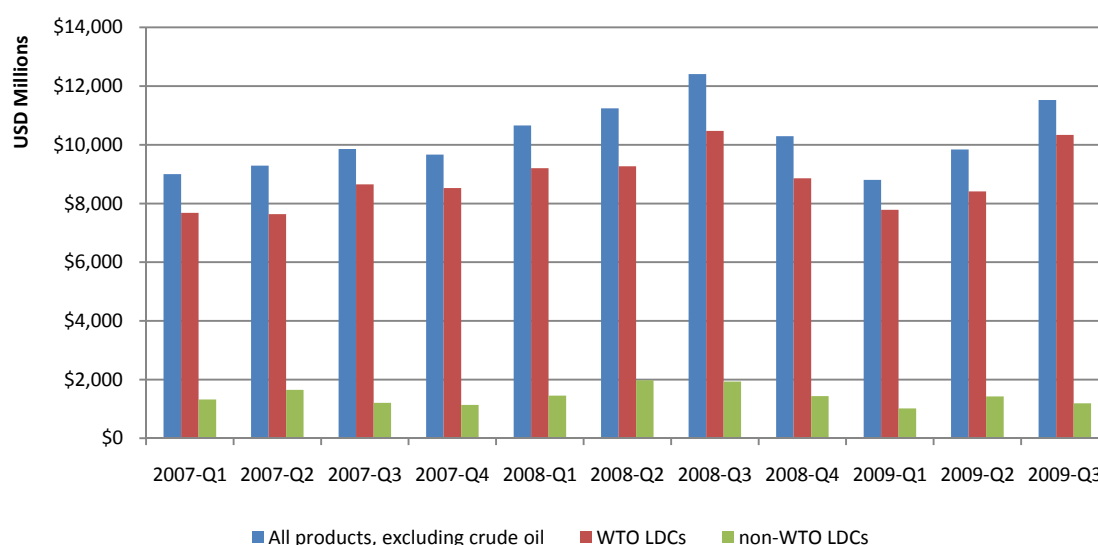
Reporting Countries: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

Two periods of time are compared here: first, the period of declining trade values, from 2008 Q2 to 2009 Q1 (the high point to the low point), and the period of recovering trade values, 2009 Q1 to 2009 Q 3 (the low point to 'present').

Following the export slump's low point in the first quarter of 2009 export values began to recover (see **Figure 1** and **Table 2**). Despite the signs of recovery since Q2 of 2009, trade data for 2009 still reflects a stark decline relative to 2008. During the first three quarters of 2009 export values for LDCs declined by over USD 4 billion compared to the prior year. This is not surprising, given that the first two quarters of 2008 were the peak of the bubble; thus, 2008 to 2009 comparisons underplay medium term trade performance. Another way to assess 2009 performance is comparing data with 2007 and averaging the growth rate over a two year period. This eliminates the comparison with a bubble year, while providing an indication of the sustained growth over these years (see **Table 1**). In this case, the results are modest, but positive for LDCs as a whole. While exports from LDCs have fallen by 12% in 2009 relative to 2008, their 2009 values still represent an average annual growth of 4% since 2007. For LDCs which are WTO members the results are even stronger, at 5%. Interestingly, non-WTO member LDCs reflect negative growth from 2007, as do Developing Countries and the World in total. For global exports this is likely to be due to dependence on demand-sensitive manufacturing industries. For the non-WTO LDCs, this could be the result of either concentration in poorly performing products or lack of access to the breadth of markets available to other LDCs, although other factors undoubtedly play an important role as well.

We also observe that on a quarterly basis WTO LDCs have experienced consistent growth during Q1-Q3 of 2009, while non-WTO LDCs have seen growth increase and retreat (see **Figure 3**). Given the seasonal nature of many traded products, it is difficult to draw strong conclusions based on quarter to quarter data, but the difference in performance between WTO and non-WTO LDCs, along with other delineating characteristics, is worth further analysis as full 2009 trade data becomes available.

Figure 3: 2007-2009 Exports from LDCs excluding crude oil



Source: ITC Trade Map

Reporting Countries: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

2.2.3 Volume of Exports

While LDC's have seen a dramatic decline in their export values following the financial crisis, results are more stable when observing quantity of exports. Indeed, in the October 2009 Trade Map fact sheet covering the first half of 2009 it was found that all commodities exported had maintained stable volumes, with growth close to zero compared to the same period of the prior year. More recent data, inclusive of the first three quarters of 2009, reveal that relative to last year 2009 volumes traded are actually growing modestly in aggregate, with growth primarily in sectors of lesser value – the top three export sectors, apparel (knit and non-knit) and mineral fuels (excluding crude oil), worth 52% of export value during the years analyzed, showed overall declines in quantities traded during 2009. Meanwhile, the extractive industries of ores, slag and ash and copper have seen their volume growth increase markedly during 2009, with copper export volumes growing 59% during the first three quarters of the year (see **Table 3**).

Table 3: Volume Changes for LDC Exports (2008-2009) – excluding crude oil

	Commodity	Share of Exports 2008-2009	Q1-Q3 Y-o-Y Growth	
			Volume	Value
Total	All commodities	100%	2.6%	-12.0%
61	Articles of apparel, accessories, knit or crochet	22%	-0.7%	-1.8%
62	Articles of apparel, accessories, not knit or crochet	17%	-1.3%	0.5%
27	Mineral fuels, oils, distillation products, etc	13%	-19.0%	-34.1%
26	Ores, slag and ash	8%	24.7%	-22.4%
74	Copper and articles thereof	4%	59.2%	-7.3%
03	Fish, crustaceans, molluscs, aquatic invertebrates nes	4%	-0.7%	-17.9%
09	Coffee, tea, mate and spices	2%	8.1%	-7.2%
44	Wood and articles of wood, wood charcoal	3%	-28.2%	-40.1%
12	Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	2%	34.7%	27.2%
24	Tobacco and manufactured tobacco substitutes	1%	11.2%	39.4%

Source: ITC Trade Map

Reporting Countries: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

While export volume growth from LDCs is positive but low for 2009, as we progress towards later months volume growth increases significantly, but, again, primarily for extractive industries. Across all commodities volume exports in September 2009 were 14.1% above volumes for the same month in 2008. In mineral and metal sectors improving growth is observed also, with mineral fuels (excluding oil) 43.5% above their volumes in September 2008, ores up 91.9%, and copper up 54.7%. Outside of these sectors, however, figures are mixed: in the two apparel product categories, among the most important in value terms for LDCs, declines in volumes of 4.2% and 5.6% are observed in September 2009, a relative deterioration compared to these products Q1-Q3 2009 performance.

3. Disaggregated Trade Impacts

3.1 Among Key Partners

Within the group of reporting countries the EU, the USA and China constitute the largest importers of products, both oil or non-oil related, from LDCs. Brazil is included due to its status as another emerging economy besides China, although its *non-crude* imports from LDCs are relatively modest in comparison to these other partners, at only 2% of China's value of imports from LDCs or 1.3% of the USA's (see **Table 4**).

Table 4: Key partner imports for LDCs, 2008-2009 (Y-o-Y % Change, USD Millions) – excluding HS2709

	2009	Y-o-Y Change in Imports			
	Q1-3 Value	Q1	Q2	Q3	Q1-3
World	\$30,086	-17%	-12%	-7%	-12%
China	\$ 4,000	-32%	0%	33%	2%
Brazil	\$ 86	-3%	-55%	-67%	-52%
USA	\$ 6,567	-10%	-14%	-15%	-13%
EU*	\$ 12,029	-17%	-12%	-5%	-11%

Source: ITC Trade Map

Reporting Countries: China, Brazil, USA, EU (less Belgium)

3.2 Among Key Sectors

In value terms, apparel, mineral fuels (excluding crude oil), ores, copper and fish constitute 67% of non-crude oil exports from LDCs to the reference group of importers in 2008 and 2009; given the large importance of these sectors they will be further analyzed below.

3.2.1 Apparel

Both knit and non-knit apparel accounted for USD 12.2 billion in export revenue for LDCs in the first three quarters of 2009, declining only modestly by USD 96 million, or less than 1%, from 2008 to 2009. During this same period knit apparel declined in volume terms by 0.72%, and non-knit by -1.25% (see **Table 5**). Average unit prices for apparel exports from all LDCs grew during this period by 0.9% for knit and 3.6% for non-knit apparel, despite the global price of wool declining by 15.5% and the price of cotton by 22% over the same period.³ By comparison, global average unit prices fell by 4% for knit and 3.4% for non-knit apparel during the same period. Among apparel exporting LDCs widely varying levels of performance observed. The top five apparel exporters, Bangladesh, Cambodia, Madagascar, Haiti and Myanmar, account for 92% of 2008 LDC exports in the sector, with

³ Economist Intelligence Unit, accessed 18 January 2009. Price changes based on average price for Q1-3 of 2008 and 2009.

Bangladesh (66.4%) and Cambodia (20.9%) commanding the majority shares. Bangladesh, the group's largest apparel exporter, may have performed well during the crisis for several reasons, particularly relative to its chief LDC peer, Cambodia.⁴

Table 5: Impacts on Top Apparel Exporters/Subsectors 2008-2009

Country	Value 2008 Q1-3 (\$,000)	Sub-sector	Value		Volume		Average Unit Value Change Q1-3	Top Export Partner, 2008 Share
			Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q		
Bangladesh	4,330,545	Knit	5%	23.1%	3.1%	26.8%	4.1%	Germany, 23.8%
Bangladesh	3,871,736	Non-knit	6.6%	-5.9%	3.3%	6.6%	5%	USA, 48.1%
Cambodia	1,828,988	Knit	-17%	34.3%	-13%	54.6%	-2.1%	USA, 64%
Cambodia	762,710	Non-knit	-30%	-15.3%	-24%	-1.3%	4.1%	USA, 76.1%
Madagascar	248,172	Knit	-15.3%	105.6%	-8.4%	175.6%	1.9%	Germany, 31.7%
Madagascar	207,952	Non-knit	-20.7%	-3.6%	-25.2%	-1.8%	3.5%	France, 63.3%
Haiti	261,375	Knit	22.4%	45.6%	5.8%	40.3%	18.7%	USA, 90%
Haiti	59,170	Non-knit	29.7%	27.6%	0.1%	27.9%	22.9%	USA, 95.8%
Myanmar	30,055	Knit	-26.1%	21.2%	-10.5%	14.3%	4.3%	Germany, 29.7%
Myanmar	245,501	Non-knit	1.6%	1.6%	3.5%	17.1%	4.1%	Japan, 40.4%

Source: ITC Trade Map

Reporting Countries for change calculations: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

Top export partner calculations based on total export data for 2008 or most recent full year available

Bangladesh is relatively more diversified in terms of export partners, with under half of its exports going to its top partner in both sub-sectors, while Cambodia focuses strongly on US markets, although their performance with the same partners also differs. During Q1-3 2009 EU apparel imports from Bangladesh grew by 5% while those from Cambodia declined by 8%; over the same period US apparel imports from Bangladesh grew by 2% while those from Cambodia declined by 24%.⁵ Bangladesh is recognized as having the lowest input costs in the industry, with global surveys showing their labor costs as the lowest in 2008 and their garment production costs the lowest in 2009; for comparison, minimum wages in Bangladesh are estimated at USD0.7 per day compared to USD1.7 in Cambodia.⁶ Reinforcing this, the Garment Manufacturers Association of Cambodia asserts that their declining market share is a result of increasing domestic costs, especially relative to competitors such as China, Vietnam and Bangladesh; with cost increases originating from higher electricity and oil costs and other inputs in Cambodia.⁷ Most recent developments, not reflected in data for the first three quarters, could rebalance these countries' export performance in the future. Negotiations have been ongoing to raise Bangladesh's minimum wage, with labor unions requesting a sharp increase in wages.⁸ Additionally, the price of yarn in Bangladesh is reported to have

⁴ Any strong conclusions made regarding Bangladesh's apparel exports performance in 2009 should be qualified by the following; in December 2009 it was reported by the European Anti-Fraud Office that some USD71.4 million in duties had been evaded on imports of Chinese apparel products which used forged customs documents stating they were of Bangladeshi origin. Using the EU tariff for Chinese apparel of approximately 11.57%, the value of falsely reported Bangladeshi exports to the EU would be over USD 617 million. As a time period over which the duties were avoided (i.e. 2009, 2008-2009, etc) is not cited, it is difficult to assess the degree to which these forgeries would affect observed trends in this paper.

Source: Bangladesh used as cover-up for textile scam, Just-Style, 23 Dec 2009, <http://www.just-style.com/article.aspx?id=106285&lk=s>

⁵ Trade Map, ITC, here Q1-3 2009/2008 calculations are based on HS61 and HS62

⁶ ANALYSIS: Bangladeshi makers bullish despite future fears, Just-Style, 24 Nov 2009, <http://www.just-style.com/article.aspx?id=106024&lk=s>

Frequently Asked Questions, Asia Wage Campaign, http://www.asiafloorwage.org/documents/FAQ/Asia_Floor_Wage_FAQs.pdf

⁷ CAMBODIA: Garment exports fall 18% in H1, Just-Style, 20 August 2009, <http://www.just-style.com/article.aspx?id=105098&d=1>

Update on Cambodian Garment and Textile Industry, Business in Asia, http://www.business-in-asia.com/industries/cambodia_garment.html

⁸ ANALYSIS: Bangladeshi makers bullish despite future fears, Just-Style, 24 Nov 2009, <http://www.just-style.com/article.aspx?id=106024&lk=s>

increased by as much as 30% in November 2009 alone; if sustained, these prices may have significant impact on the country's large knit apparel sector.⁹

Notably, Haiti showed significantly improving growth in its non-knit sector compared to competitors, while others showed either modest or declining performance, or both; one suggested reason for this is the country's preferential access to the US market. In September 2008 the Haitian Hemispheric Opportunity through Partnership Encouragement (HHOPE) Act was passed in the US, providing duty free access to woven (i.e. not-knit) goods produced in Haiti without restrictions regarding input materials for three years, and for ten years provides duty free access to a wide range of apparel which conforms to rules of origin criteria for input fabrics.¹⁰ Haiti's recent devastation is likely to have major impacts on its export performance for the foreseeable future.

3.2.2 Mineral Fuels, excluding Crude Oil

Mineral fuel exports are the second most exported category of goods by LDCs, even excluding crude oil. Besides crude oil, this product category is dominated by petroleum gases, such as natural gas, propane, and butanes, accounting for 85% of non-crude exports in the sector. Myanmar and Equatorial Guinea primarily export petroleum gases, whereas Angola's exports focus other forms of petroleum oil (besides crude) (see **Table 6**). In the case of Myanmar a significant share of their exports are represented in the below table, with 76% of total mineral fuel exports represented, whereas for Equatorial Guinea (14.7%) and Angola (0.8%) the non-crude share is relatively insignificant to their total exports. While Myanmar experienced an overall decline in 2009 in value and volume terms, it has experienced both volume and value recovery since the first quarter of 2009; a deal signed in March 2009 for a China-Myanmar natural gas pipeline is likely to see the country's exports further accelerate in coming years.

Table 6: Impacts on Top Mineral Fuels Exporters 2008-2009

Country	Value 2008 Q1-3 (\$,000)	Value		Volume		Average Unit Value Change Q1-3	Top Export Partner, 2008 Share
		Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q		
Myanmar	2,402,206	-18.6%	36.9%	-28.1%	63.1%	13%	Thailand, 99.9%
Equatorial Guinea	1,748,983	-51.8%	-21.8%	-31.8%	70.1%	-28%	Japan, 43.7%
Angola	501,714	-55.2%	228.2%	-14.7%	81.3%	-47%	USA, 41.8%

Source: ITC Trade Map

Reporting Countries for change calculations: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

Top export partner calculations based on total export data for 2008 or most recent full year available

⁹ BANGLADESH: Yarn exports hit by soaring prices, Just-Style, 21 Dec 2009, <http://www.just-style.com/article.aspx?id=106262&lk=s>

¹⁰ Haitian Hemispheric Opportunity through Partnership Encouragement (HHOPE) Act, Caribbean Trade Reference Center, http://cpqrack2.sice.oas.org/Trade/HHOPE/HHOPE_e.asp

3.2.3 Ores and Copper

Table 7: Impacts on Top Ore Exporters 2008-2009

Country	Value	Value		Volume		Average Unit Value Change Q1-3	Top Export Partner, 2008 Share
	2008 Q1-3 (\$,000)	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q		
Mauritania	985,715	-27.2%	71.6%	16.6%	50.7%	-20.2%	France, 19.1%*
DR Congo	805,983	-48.0%	170.8%	17.0%	151.0%	-57.0%	China, 63.9%
Guinea	520,125	-22.3%	-11.6%	-16.2%	-1.1%	-4.9%	Spain, 24.5%
United Republic of Tanzania	103,686	26.7%	50.5%	69.1%	45.5%	-19.8%	China, 62.6%

Source: ITC Trade Map

Reporting Countries for change calculations: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

Top export partner calculations based on total export data for 2008 or most recent full year available

* 23% goes to areas not elsewhere specified

Both ore and copper exports from LDCs have been characterized by generally increasing volumes during periods with declining values. For ores, only Guinea saw declining volumes traded from 2008 to 2009 (see **Table 7**). In copper, all exporters with available data showed increasing year on year volumes traded (see **Table 8**). Top exporters in both ores (Mauritania, DR Congo) and copper (Zambia) also show growing quantity exports during this year, whereas smaller exporters such as Guinea in ores and Lao in copper reflect declining volumes exported since the beginning of 2009.

In the case of copper, Zambia's growth of over 91.9% in volume terms since 2008 is fuelled largely by China, which increased its copper imports from Zambia, the top LDC exporting copper, by over 330% in volume terms.¹¹ This surge in copper imports was presumably fueled by the Chinese stimulus package, which allowed for duty-free warehousing of imported copper that coincided with reduced availability of domestically sourced copper scrap due to stimulus related construction. The sustained and increasing copper volumes traded during and after the crisis may soon dissipate, however, as Chinese stimulus policies come to an end, including incentives to stockpile copper. China's largest copper importer, state-owned Xi'an Maikang, expects Chinese copper imports to decline by as much as 46% in 2010, as availability of domestic scrap increases and price competitiveness of imports further declines, following price parity with Chinese produced copper which was reached in July 2009.¹²

Table 8: Impacts on Top Copper Exporters 2008-2009

Country	Value	Value		Volume		Average Unit Value Change Q1-3	Top Export Partner, 2008 Share
	2008 Q1-3 (\$,000)	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q		
Zambia	782,394	14.1%	258.4	91.9%	125.7	-43.2%	Switzerland, 61.7%
Lao PDR	322,004	-42.2%	-9.0	3.2%	-41.6	-44.4%	Thailand, 90.9%
DR Congo	269,401	-14.9%	165.4	31.2%	11.3	-49.2%	China, 81.0%
Myanmar	15,997	40.1%	-78.2	159.1%	-75.1	-46.1%	China, 43.4%

Source: ITC Trade Map

Reporting Countries for change calculations: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

Top export partner calculations based on total export data for 2008 or most recent full year available

¹¹ ITC Trade Map

¹² China to re-export copper on stockpiles, People's Daily Online, 11 Nov 2009, <http://english.peopledaily.com.cn/90001/90778/90861/6809757.html>

3.2.4 Seafood

At the fifth most exported product, with only 4% of non-crude exported value, the fish, crustaceans, mollusks, and aquatic invertebrates product category constitutes a relatively minor share of LDC exports. Besides Tanzania, all top exporters have enjoyed both volume and value growth in their exports, both from 2008 to 2009 and through 2009, although unit prices were stagnant or in significant decline for all exporters. For these top 4 growth appears to have occurred irrespective of main trade partner or composition within the seafood product line: 80% of Bangladesh's exports are in shrimp; Mauritania's are split 57% in fish and 43% in mollusks; Myanmar split 55% to fish and 41% to shrimp; and Senegal split 68% to fish and 23% to mollusks.¹³ Tanzania, the only decliner from 2008 and throughout 2009, is highly concentrated in fish, which constituted 92% of its seafood exports in 2008. Notably, any changes in growth within 2009 should be read with the knowledge that fish catches and exports display seasonal fluctuations in some countries, as well as fluctuations which are weather related; stronger conclusions may be evident when full 2009 data is available.¹⁴ Additionally, conclusions regarding Mauritania's performance in 2009 need to be reassessed once bilateral trade data is available for Côte d'Ivoire, by far its most important trade partner in this sector.

Table 9: Impacts on Top Fish Exporters 2008-2009

Country	Value 2008 Q1-3 (\$,000)	Value		Volume		Average Unit Value Change Q1-3	Top Export Partner, 2008 Share
		Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q	Q1-3 09/08 Y-o-Y	2009 Q1 -Q3 Q-o-Q		
Bangladesh	230,882	3.4%	30.7	4.7%	29.3	-2.1%	USA, 31.1%
Mauritania	211,853	1.9%	37.6	67.5%	52.7	-36.8%	Côte d'Ivoire, 77.6%
Myanmar	171,106	2.8%	5.1	4.5%	3.2	1.7%	Thailand, 24.9%
Senegal	174,736	-10.4%	71.1	12.2%	70.8	-17.6%	Spain, 20.7%
United Republic of Tanzania	126,458	-22.9%	-10.0	-23.3%	-10.4	3.5%	Italy, 22.4%

Source: ITC Trade Map

Reporting Countries for change calculations: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

Top export partner calculations based on total export data for 2008 or most recent full year available

4. Potential Determinants of Crisis Impacts

4.1 WTO Membership

As noted previously, on average LDCs with WTO membership exhibited stronger export performance than their non-WTO counterparts during 2008-2009. In this section, we examine whether a country's status as member of the WTO is statistically linked to the variability in export performance. In order to make a scientific judgment, the following hypotheses have been tested via the Savage statistical test detailed in Annex 1.

Prior to the crisis and during the post-crisis recovery we observe that countries with WTO member status had stronger export performance at a statistically significant level.¹⁵ Contrasting this, during the crisis WTO member status is not statistically significant relative to the variability in export

¹³ ITC Trade Map – shares of 2008 exports in HS03, disaggregated at the HS-4 digit level

¹⁴ Fishery and Aquaculture Country Profiles, Ghana, Fisheries and Aquaculture Department, Food and Agriculture Organization, http://www.fao.org/fishery/countrysector/FI-CP_GH/en

Olaniran, T. S., Seasonal environmental changes and fish catch assessment in International Institute for Tropical Agriculture Lake, Ibadan, Nigeria., Journal of Environmental Extension

¹⁵ Prior to the crisis - within the period 2004-2007

Post-crisis recovery - using the period 2008Q3 to 2009Q3

performance of LDCs.¹⁶ These findings are observed both including and excluding crude oil, with findings excluding crude oil showing a higher level of significance. The narrative that may follow from these findings is that during times of normal trade or times of recovery, i.e. times of global trade growth, LDCs that are WTO members enjoy higher rates of export growth. During times of global decline, however, status as a WTO member is irrelevant, as demand declines irrespective of trade partner.

That WTO membership is associated with LDC's export performance is a curious finding, given that LDC's status (for WTO members and otherwise) grants access to preferential tariff rates in many major importing markets, such as through the Generalized System of Preferences, the US African Growth and Opportunity Act, the EU Everything But Arms initiative, and so on. Differences in export growth may arise, however, due to non-WTO LDC's dependence on utilizing special preference schemes to enjoy lower tariffs, whereas those with WTO membership may enjoy a more streamlined process to take advantage of most favored nation tariff rates. Limited utilization of available preference schemes is anecdotally reported in Cambodia's apparel sector, and is a topic worthy of further analysis.¹⁷

4.2 Diversification

One possible determinant of trade performance, both during normal times as well as this post-crisis period, is each exporting country's level of product and market diversification. The basic hypothesis is that economies which are concentrated on fewer products as well as fewer markets are more vulnerable to shocks in export demand than those who have diversified their exports across a broad range of sectors and partners; that is, more diversified exporters are expected to perform better than more concentrated exporters.

Without consideration for composition within product and market concentration, this hypothesis seems to hold using broad, aggregate groups (see **Table 10**). When dividing LDCs into two groups, those within the WTO and those outside of it, we find that WTO members are slightly less concentrated. These more diversified LDCs, on average, also experienced a milder decline than the remaining LDCs. Interestingly, according to our simple calculations of concentration the overall group of developing countries, which is significantly less concentrated, would be expected to perform better than any group of LDCs, although they only outperformed the highly concentrated non-WTO LDCs. This is likely due to the composition of their relatively diversified exports, explored further below.

Table 10: Simple Product and Market Concentration among select partners

	Product Concentration	Market Concentration	Average Concentration	Growth Trend	
				2008Q2-2009Q1	2009Q1-2009Q3
LDC	71%	75%	73%	-8%	14%
LDC WTO	68%	72%	70%	-6%	15%
LDC Non-WTO	78%	78%	78%	-20%	8%
DC	62%	74%	68%	-12%	9%

Note: figures for each group are based on a simple average of their individual 'member's' respective levels of concentration. Product concentration is the percentage of exports for the top three products (HS6-level); Market concentration is the percentage of exports going to the top three export partners.

¹⁶ During the crisis - within the period 2008Q1-Q3 to 2009Q1-Q3

¹⁷ CAMBODIA: Garment exports fall 18% in H1, Just-Style, 20 August 2009, <http://www.just-style.com/article.aspx?id=105098&d=1>

The most basic form of assessing product or market concentration is *simple concentration*, measuring the percentage of trade encompassed within the certain number of products or partners (i.e. 3 products or partners in the table above and examples below). Alternative, more nuanced measures of either product or market concentrations include the *number of active product lines* or *partners* (in total, or within some arbitrary percentage of export value) and weighted indices of product or market concentration (i.e. the *Herfindahl index*). More details on these methodologies are available in **Annex 2**, with calculations available for all LDCs in **Annex 3**; illustrative examples are provided below of the various calculations for product concentration.

Within the available literature there are several more sophisticated views on the impacts of diversification on export performance (either post-financial crisis or in general), for example product or market *resilience measures*. These are discussed but will not be utilized until complete trade data is available for 2009.

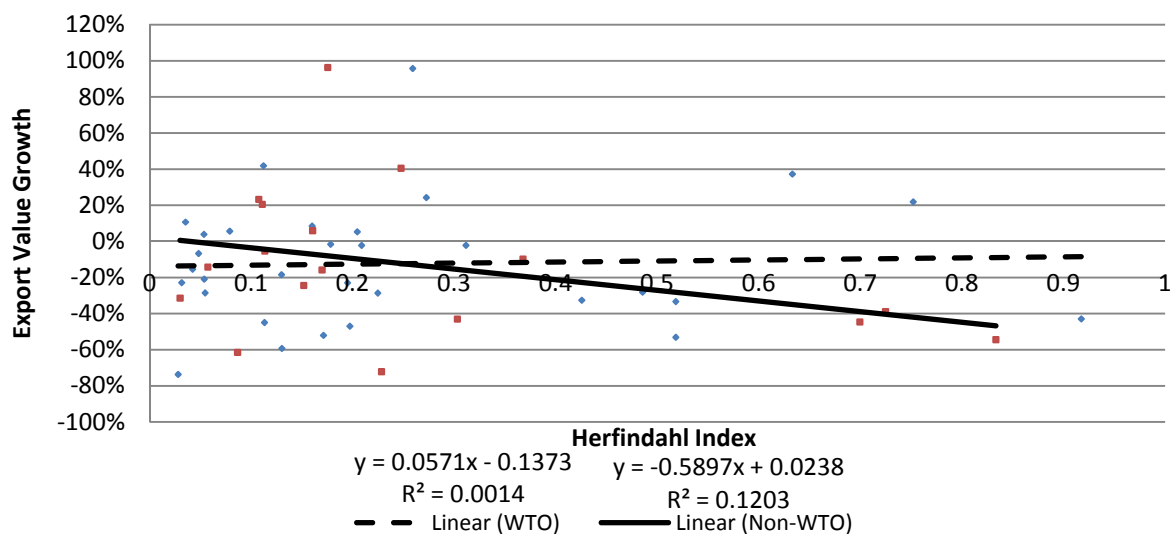
4.2.1 Product Concentration

Simple product concentration measures the percent of exports encompassed by the top exported products, but may be too simple; while this measure makes it clear that some countries, particularly natural resource exporters, are highly concentrated in only 3 products (e.g. Angola – 99%), it is less informative about the differences between relatively diversified countries. Two countries with similar weight towards their top three minority share products may exhibit wide differences in the remaining majority of their export sectors, both regarding share per product and variety of products. For example, Bangladesh’s top three exports account for 40%, as do Tanzania’s, but this says little about their level of diversification beyond these products. Using the *number of active product lines* approach, 75% of Bangladesh’s export value includes 28 product lines, whereas the same share of Tanzania’s exports includes 39 product lines.¹⁸ In addition to emphasizing diversification differences between similarly diversified countries, *number of active product lines* also further highlights the high degree of concentration in other economies – in Angola, the top 75% of exports includes 1 product line (crude oil). Accounting for distribution of value among all exported products, the *Herfindahl index* for Angola is 0.92, Bangladesh of 0.05, and Tanzania of 0.03 (with 1 being completely concentrated on one product, 0 being perfectly diversified among all products).

A priori one would expect the relationship between export diversification and trade performance is that as export diversification increases, so would trade performance, including in times of crisis and recovery. Following from our conclusions above, that WTO members do have a higher trade performance both in normal times and times of recovery, we split our group of LDCs into WTO and Non-WTO LDCs. Mapping their year on year trade value growth we find a weak, positive relationship between product concentration and export value growth in 2009 for WTO LDCs; for non-WTO LDCs we observe a slightly stronger, negative relationship between product concentration and export value growth (see **Figure 4**). Similar findings are observed when making a similar comparison between export diversification and export volume growth; again, WTO LDCs with higher export concentrations exhibit higher volume growths during 2009, whereas non-WTO LDCs show a much stronger, negative correlation between their product concentration and export volume growth.

¹⁸Trade Map data for Bangladesh and Tanzania – year 2007 used (last direct data year for both)

Figure 4: Product Diversification and Export Value Performance, Q1-Q3 2008/2009



4.2.2 Market Concentration

Regarding market concentration, similar measures are available as described above: simple sums of top three partners' market shares; number of active partners within 75% of trade; total number of active partners; or weighted indices, such as the Herfindahl index. Unfortunately, the limited number of reporting countries available in most-recent 2009 monthly and quarterly data, representing about two-thirds of world imports by value but only one quarter of total reporters, increases the risk of reaching specious conclusions using this limited data set; moreover, that the group is primarily developed and emerging economies, and lacks very few low-income or neighboring African or Asian economies (with whom potentially resilient regional trade would take place) provides further argument against this level of analysis using limited mirror data. For this reason measures of market diversification and analysis of its relationship with trade performance will be delayed until 2009 data for all reporting countries to Trade Map is available.

4.2.3 Resilience Indicators

The likely implications of the global financial crisis on trade have been researched during 2009; lacking current, post-crisis data, prior studies relied primarily on changing price levels for major commodities, drawing inferences on the likely impacts for developing countries based on demand elasticities for types of goods as well as past (regional) experiences in the Asian Financial Crisis.¹⁹ This prior analysis is centered on construction of resilience measures for both countries' export partners and exported products.²⁰

To determine resilience indices for exported products, income-demand elasticities are calculated for top exported goods from the group of LDCs. For mineral fuels and other mining products this elasticity is high, with demand responding quickly to changes in income (global GDP) while supply changes are sluggish, with a predicted rapid price decline. For agricultural products low income

¹⁹ Meyn, Mareike; Kennan, Jane. The Implications of the global financial crisis for develop countries' export volumes and values. Working Paper 305, Overseas Development Institute, June 2009

²⁰ Cali, Massimiliano; Kennan, Jane. The effect of the Global Financial Crisis on exports in Least Developed Countries. Overseas Development Institute, 30 September 2009

elasticity is observed, presumably due to their status as a basic necessity for regular consumption as opposed to energy (considered a *luxury* which can vary significantly with industrial activity); this typically holds true for most food products, including beverages such as coffee or tea.²¹ Similar to mineral fuels, demand for manufactured goods is highly elastic, although differs in that supply is able to respond quickly to demand changes, leading to more rapid volume changes. Manufacturing is also unique from mineral fuels in that it is often dependent on imported intermediate goods, leaving producers vulnerable to varying commodity prices (currently lower, but rising) and availability of credit for trade-finance (reported by the World Bank as both more difficult to obtain and at higher rates since the crisis).²² Finally, it is noted that labor intensive low-value added manufacturing is subject to fiercer than typical competition during times of crisis as quantity demand declines and numerous manufacturers compete for remaining orders. In summary, lacking post-financial crisis trade data, prior research generally predicted decline among manufacturing or minerals-dependent developing countries, and relative stability among agricultural countries.²³

Using a broad sectoral aggregation across all LDCs as well as global exports, we find support for Cali and Kennan's sectoral projections. For LDCs the least affected sectors included fruit and vegetables; foodstuffs (which grew significantly); textiles, footwear and headgear; stone and glass; and transportation equipment. Fastest declining exports from LDCs included plastics and rubbers; wood products; rawhides, leathers, etc; metals; and mineral fuels.

Table 11: Sectoral Breakdown of World Imports by Sector (Excluding Crude Oil)

World-World Sector	Share of exports		2008-2009 Growth			2009 Quarterly Growth		
	World	LDC	World	LDC	Difference	World	LDC	Difference
01-05 Animal & Animal Products	2.0%	4.5%	-14.7%	-17.4%	-2.7%	5.9%	14.2%	8.3%
06-15 Fruit & Vegetable Products	3.1%	6.3%	-20.4%	-0.9%	19.5%	-1.3%	8.6%	9.9%
16-24 Foodstuffs	3.2%	3.3%	-11.0%	12.7%	23.7%	8.0%	-0.6%	-8.6%
25-27 Mineral Products*	10.5%	21.9%	-38.4%	-27.7%	10.6%	2.4%	15.7%	13.3%
28-38 Chemicals & Allied Industries	10.3%	1.7%	-19.1%	-6.8%	12.4%	6.5%	58.7%	52.2%
39-40 Plastics / Rubbers	4.7%	0.8%	-27.6%	-51.5%	-24.0%	12.3%	4.1%	-8.1%
41-43 Raw Hides, Skins, Leather, & Furs	0.6%	0.7%	-24.4%	-39.3%	-14.9%	4.5%	-15.0%	-19.5%
44-49 Wood & Wood Products	3.0%	2.9%	-25.8%	-39.5%	-13.7%	6.6%	7.2%	0.6%
50-63 Textiles	4.6%	41.6%	-16.4%	-2.6%	13.8%	7.2%	6.6%	-0.6%
64-67 Footwear / Headgear	0.9%	1.6%	-12.1%	10.3%	22.4%	3.0%	11.5%	8.6%
68-71 Stone / Glass	2.7%	1.3%	-28.8%	8.7%	37.5%	4.5%	-18.7%	-23.2%
72-83 Metals	8.7%	7.8%	-43.9%	-32.1%	11.8%	6.1%	45.2%	39.1%
84-85 Machinery / Electrical	27.6%	0.9%	-25.5%	-13.6%	11.9%	8.2%	6.3%	-1.9%
86-89 Transportation	10.3%	3.6%	-33.9%	52.5%	86.4%	6.8%	168.3%	161.5%
90-97 Miscellaneous	6.5%	0.4%	-20.7%	-9.2%	11.4%	8.9%	3.5%	-5.4%
98-99 NEC	1.3%	0.7%	-18.6%	-20.9%	-2.3%	-7.0%	-7.2%	-0.3%
Total	100.0%	100.0%	-27.5%	-11.9%	15.7%	6.7%	14.3%	7.6%

Source: ITC Trade Map

Reporting Countries: Australia, Bolivia, Brazil, China, Chinese Taipei, Colombia, El Salvador, EU27 (less Belgium), Iceland, Japan, Mauritius, Mexico, Singapore, Switzerland, Thailand, Turkey, United States of America

²¹ 'Luxury' agricultural goods, such as those labeled as 'fair trade' or 'organic' crops, likely experience more volatile demand during times of crisis as consumers switch towards generic substitutes. The research also notes the impact of trade preferences on export performance in agriculture during times of crisis; those countries with duty free access to the EU market (LDCs and the ACP countries, among others) were expected to enjoy higher stability in the price of their exports, due to the EU's Common Agricultural Policy which works to stabilize food prices.

²² Global Economic Prospects 2010, The World Bank, 21 January 2010, page 98, <http://go.worldbank.org/7NIPEVSMO0>

²³ Meyn, Mareike; Kennan, Jane. The Implications of the global financial crisis for develop countries' export volumes and values. Working Paper 305, Overseas Development Institute, June 2009

Regarding destination markets, a similar resilience approach is feasible, using 2009 estimated real GDP growth rates weighted against each export partner's relative share of export value from each LDC. This methodology assumes that partners with negative or slower rates of growth, i.e. developed countries in 2009, will decrease their overall imports, whereas those with moderate or high growth, such as developing countries and particularly emerging markets in 2009, will maintain or grow their level of imports. Thus, those LDCs with high shares of exports going to emerging markets such as China, or high shares of trade going to relatively stable regional partners, would outperform those LDCs focusing exclusively on developed economies such as the US and EU.

5. Conclusions

This Trade Map Factsheet supports the observation of trade recovery for LDCs. However, the impact of the crisis is still felt through lower export earnings for LDCs. The factsheet also demonstrates that during 2009 LDC's increased the overall volume of exports, in particular for metals and ores. Hence the impact of the sharply lower prices for some of the key export commodities of the LDCs implies that more exports earn less.

Annex 1 – Statistical Methodology

Hypothesis-testing

$H_0: trend_{wto}^{pc} = trend_{nwto}^{pc}$ (e.i. the effect of WTO member's status is not significant)

$H_1: trend_{wto}^{pc} \neq trend_{nwto}^{pc}$ (e.i. the effect of WTO member's status accounts significantly for different export growth rates)

H_1 , called the alternative hypothesis, is the assumption taken when H_0 (null hypothesis) is rejected. The degree of risk H_0 will be rejected is called level of significance α (traditionally we select levels 0.01 or 0.05 or 0.10). The symbol **pc** denotes period of the crisis and **nwto** corresponds to Non WTO member. In addition to testing this relationship over the period of crisis, we also test during periods of 'normal' trade patterns as well as the period of recovery following the crisis. We define our three periods as detailed below:

- **Period of normal trade:** growth from 2004 to 2007
- **Period of crisis:** growth from 2008 Q1-3 to 2009 Q1-3
- **Period of recovery:** growth from 2008 Q3 to 2009 Q3

We test the existence of the independence between two samples with respect to WTO membership status. We propose a suitable non-parametric method, called **Savage** (Stat = **S**) signed rank test. This method is an exact approximation of the CHI-square under the null hypothesis.

Results (short listing from the SAS outputs)

Before the crisis (within the period 2004-2007 and **including crude oil**); these results hold when excluding crude oil also.

The NPAR1WAY Procedure (SAS software)
Savage Scores (Exponential) for Variable trend Classified by Variable group

Group	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
NWTO	17	5.635074	0.0	3.208858	0.331475
WTO	32	-5.635074	0.0	3.208858	-0.176096

Savage Two-Sample Test

Statistic 5.6351
Z 1.7561
One-Sided Pr > Z 0.0395

This level < 0.05. As decision, H0 should be rejected at 5% of risk

During the crisis (within the period 2008Q1Q3-2009Q1Q3 and including crude oil)

Savage Two-Sample Test

Statistic -1.9737
Z -0.6151
One-Sided Pr < Z 0.2693

This level > 0.05. As decision, do not reject H0 at 5% of risk error.

During the crisis (within the period 2008Q3-2009Q3 and including crude oil)

Savage Two-Sample Test

Statistic -6.1691
Z -1.9225
One-Sided Pr < Z 0.0273

This level < 0.05. As decision, H0 should be rejected at 5% of risk

Annex 2 – Diversification Methodologies

In prior research several methods of measuring product diversification are established; below follows a brief review of these techniques and their applicability to the sample data available for this study. Calculations of the suggested product concentration measures can be found in **Annex 3**. Below these methodologies are elaborated concerning product concentration, but are also applicable to market concentration, substituting trade partners for exported products.

Top Products'/Partners' Share of Exports

One method of calculating product diversification is determining a simple level of product concentration among top export sectors. This entails measuring the percentage of trade value which the top three export products account for.²⁴ The strength of this measure is that it is intuitive and relatively simple to calculate for all countries, but the provided figure states very little about the composition of trade within these top three products or the number of products and their composition outside of these top three.

Number of Product Lines/Partners in Exports

A common technique to address the shortcomings of the prior method is to measure the number of 'positive' export lines (i.e. products with a non-zero export value in a given year) for each exporter.²⁵ If necessary, the number of products can be confined to within a certain share of trade, e.g. 75%, to eliminate convergence of many different countries' measures as a large number of products with *nearly* zero exported value are included when counting all exports. The strength of this approach is that it allows further differentiation beyond the top products' share, but provides little insight into the distribution among the number of products listed.

Concentration Indices

In addition to simple calculations based on shares of exports or the number of active product lines it is also possible to create indices of diversification which take into account the value of each product line, whether a good is a 'traditional' export or not, and the share of non-exported goods (zero value lines). In some cases such indices require time-series data, and calculate the changes in degrees of diversification over time, and whether diversification occurs extensively (in new sectors/new markets) or intensively (new products in old sectors/old markets). Prior literature on this methodology seems to consistently show low-income countries with limited export diversification, low to middle income countries with high levels of extensive diversification ('trying' many new sectors with relatively low barriers to entry) and high income countries focusing on intensive diversification (new product lines with high-value added sectors, and presumably high barriers to entry related to technology or research and development).²⁶ While such measures of changing diversification over time may provide insight into LDCs' changing trade performance (prior studies

²⁴ At the 6-digit level

²⁵ Carrere, Celine; Strauss-Kahn, Vanessa; Cadot, Olivier. Export Diversification – What's behind the Hump?. CEPR Discussion Papers Series 6590, November 2007

²⁶ Carrere, Celine; Strauss-Kahn, Vanessa; Cadot, Olivier. Export Diversification – What's behind the Hump?. CEPR Discussion Papers Series 6590, November 2007

Brenton, Paul; Newfarmer, Richard. Watching More Than the Discovery Channel: Export Cycles and Diversification in Development. Policy Research Working Paper 4302, International Trade Department, The World Bank, August 2007

have focused on GDP growth instead of trade specific indicators) it will not be possible to utilize this methodology until full 2009 data is available for comparison with prior years.

Due to the relatively more stringent data requirements for measuring extensive and intensive diversification over time, and incomplete 2009 coverage currently, we instead opt for the relatively straightforward Herfindahl index, which sums the squares of each product line's share of exports. This results in single sectors with large shares of export value skewing the index upward while sectors with small shares increase index values only marginally. For example, in the case of 5 products equally accounting for 100% of exports, we would find a Herfindahl index of $5 \times .2^2 = .2$. Comparatively, with 1 product accounting for 60% of exports and the remaining 4 worth 10% each, we would find a Herfindahl index of $.6^2 + 4 \times .1^2 = .4$, twice the value of the first example.

Annex 3 – Export Impact and Product Diversification Tables

Table 12: Export Impacts per Least Developed Country, 2008-2009

Exporters	Q1-3 2008-2009 ²⁷		Top Exports (HS2, Desc, % Share 2008)										Diversification Measures	
	Change	% Change	1		2		3		Herfindahl ²⁸	Active product lines (within 75%)	All Product Lines			
Afghanistan	\$ -48.3	-31.4%	8	Fruit	51%	57	Carpets	41%	9	Coffee	3%	31	1,545	
Angola	\$ -284.8	-42.9%	27	Oil	98%	71	Precious stones	1%	88	Aircraft	0%	1	1,135	
Bangladesh	\$ 380.3	3.9%	61	Apparel, knit	44%	62	Apparel, not knit	37%	63	Other textiles	4%	28	2,761	
Benin	\$ -157.3	-59.3%	52	Cotton	26%	27	Oil	23%	8	Fruit	13%	7	1,003	
Bhutan	\$ 0.7	20.5%	27	Oil	49%	9	Coffee	46%	8	Fruit	1%	7	451	
Burkina Faso	\$ -68.4	-33.4%	52	Cotton	53%	71	Precious stones	17%	12	Oil seed, etc	16%	2	1,403	
Burundi	\$ 20.7	95.8%	71	Precious stones	43%	9	Coffee	33%	87	Vehicles	6%	4	571	
Cambodia	\$ -207.7	-6.7%	61	Apparel, knit	60%	62	Apparel, not knit	25%	64	Footwear	7%	28	1,687	
Central African Republic	\$ -32.6	-47.0%	44	Wood	49%	71	Precious stones	28%	52	Cotton	13%	3	655	
Chad	\$ 25.9	21.9%	27	Oil	97%	52	Cotton	1%	13	Gums, etc	1%	1	503	
Comoros	\$ -5.2	-24.4%	9	Coffee	29%	89	Ships	28%	33	Ess. Oils	27%	4	207	
DR Congo	\$ -985.8	-52.1%	26	Ores	44%	81	Base metals	16%	71	Precious stones	14%	4	1,089	
Djibouti	\$ 1.7	10.7%	1	Live animals	27%	27	Oil	21%	41	Raw hide, leather	7%	32	1,135	
Equatorial Guinea	\$ -1,188.0	-54.4%	27	Oil	96%	29	Org. chemicals	3%	44	Wood	1%	1	434	
Eritrea	\$ -1.3	-15.8%	87	Vehicles	27%	41	Raw hide, leather	11%	12	Oil seed, etc	8%	16	593	
Ethiopia	\$ 39.4	5.9%	9	Coffee	36%	12	Oil seed, etc	16%	7	Vegetables	14%	12	1,367	
Gambia	\$ 5.7	41.9%	3	Fish	25%	8	Fruit	17%	72	Iron and steel	15%	21	813	
Guinea	\$ -181.9	-28.6%	26	Ores	40%	71	Precious stones	33%	28	Inorg. Chemicals	12%	3	1,183	
Guinea-Bissau	\$ 1.2	37.3%	8	Fruit	93%	72	Iron and steel	2%	44	Wood	1%	1	300	
Haiti	\$ 35.7	8.5%	61	Apparel, knit	68%	62	Apparel, not knit	13%	72	Iron and steel	5%	7	802	
Kiribati	\$ 2.9	23.3%	3	Fish	61%	15	Fats & oils	14%	84	Machinery	5%	6	253	
Lao PDR	\$ -43.4	-5.4%	74	Copper	36%	61	Apparel, knit	12%	44	Wood	11%	15	1,266	
Lesotho	\$ -54.8	-18.4%	71	Precious stones	41%	61	Apparel, knit	34%	62	Apparel, not knit	21%	5	384	
Liberia	\$ 157.1	40.5%	27	Oil	35%	40	Rubber	31%	89	Ships	25%	2	645	
Madagascar	\$ -137.3	-15.4%	62	Apparel, not knit	37%	61	Apparel, knit	16%	3	Fish	8%	29	1,974	
Malawi	\$ 68.6	24.3%	24	Tobacco	67%	17	Sugars	6%	9	Coffee	5%	5	1,054	
Maldives	\$ -58.2	-44.9%	3	Fish	90%	16	Meat	8%	72	Iron and steel	1%	7	838	
Mali	\$ -73.6	-53.1%	71	Precious stones	75%	52	Cotton	11%	1	Live animals	6%	1	1,497	
Mauritania	\$ -279.9	-23.0%	26	Ores	63%	27	Oil	19%	3	Fish	15%	4	867	
Mozambique	\$ -310.5	-32.6%	76	Aluminum	55%	27	Oil	11%	99	NES	7%	3	1,658	
Myanmar	\$ -68.9	-1.6%	27	Oil	51%	44	Wood	15%	7	Vegetables	12%	13	1,670	

²⁷ Figures for change in export value exclude HS2709, crude oil

²⁸ Range from 0 to 1. Larger numbers indicate a higher degree of product concentration, smaller numbers a higher degree of production diversification.

Exporters	Q1-3 2008-2009 ²⁷		Top Exports (HS2, Desc, % Share 2008)									Diversification Measures		
	Change	% Change	1			2			3			Herfindahl ²⁸	Active product lines (within 75%)	All Product Lines
			Count	Desc	%	Count	Desc	%	Count	Desc	%			
Nepal	\$ -44.4	-22.9%	57	Carpets	12%	72	Iron and steel	12%	39	Plastics	7%	0.03	72	1,876
Niger	\$ 223.1	246.7%	26	Ores	58%	1	Live animals	9%	63	Other textiles	6%	0.30	5	1,476
Rwanda	\$ -1.7	-2.2%	9	Coffee	45%	26	Ores	34%	22	Beverages	8%	0.21	3	746
Samoa	\$ -27.8	-43.0%	85	Electronics	81%	3	Fish	8%	22	Beverages	2%	0.30	7	751
Sao Tome and Principe	\$ 2.2	96.3%	18	Cocoa	48%	27	Oil	47%	87	Vehicles	2%	0.18	20	444
Senegal	\$ -79.5	-20.9%	27	Oil	34%	28	Inorg. Chemicals	10%	3	Fish	10%	0.05	35	2,919
Sierra Leone	\$ 4.8	5.3%	71	Precious stones	29%	26	Ores	21%	27	Oil	15%	0.20	13	1,632
Solomon Is	\$ -67.8	-28.1%	44	Wood	72%	3	Fish	10%	12	Oil seed, etc	5%	0.49	1	395
Somalia	\$ -2.1	-61.5%	1	Live animals	34%	71	Precious stones	19%	41	Raw hide, leather	10%	0.09	11	736
Sudan	\$ -101.4	-38.9%	27	Oil	94%	12	Oil seed, etc	2%	1	Live animals	1%	0.72	1	1,159
Timor-Leste	\$ -82.8	-73.7%	27	Oil	83%	9	Coffee	7%	49	Printed books, etc	3%	0.03	39	2,820
Togo	\$ -26.1	-9.8%	52	Cotton	45%	25	Salt, etc	18%	18	Cocoa	15%	0.37	2	366
Tuvalu	\$ -0.3	-28.5%	89	Ships	37%	90	Technical apparatus	11%	71	Precious stones	10%	0.05	19	2,118
Uganda	\$ -63.2	-14.2%	9	Coffee	26%	3	Fish	7%	85	Electronics	5%	0.06	40	236
Tanzania	\$ 34.9	5.6%	71	Precious stones	12%	3	Fish	10%	9	Coffee	8%	0.08	21	2,305
Vanuatu	\$ -340.5	-72.1%	89	Ships	53%	3	Fish	39%	12	Oil seed, etc	3%	0.23	3	398
Yemen	\$ -91.6	-44.6%	27	Oil	89%	3	Fish	2%	87	Vehicles	2%	0.70	1	1,733
Zambia	\$ -26.9	-2.2%	74	Copper	66%	26	Ores	13%	81	Other metals	6%	0.31	5	2,174
Total LDCs	\$ -4,139.2	-12.1%	27	Oil	62%	61	Apparel, knit	7%	62	Apparel, not knit	5%