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FACT SHEET

Discrepancies in Forest Products Trade Statistics

Introduction

The general public has little problem recognizing that the combination of small size and high intrinsic value of diamonds and other gemstones facilitate the smuggling and illegal trade of these products. This is aided by the fact that it is extremely difficult (but not impossible) to tell if a diamond was illegally exported simply by looking at it. In contrast, many people have a harder time understanding how large and bulky products like logs, lumber and plywood can be illegally traded or how there can be large discrepancies on the order of millions of cubic meters in the trade statistics between countries.

Within the timber trade there is a broad range of factors which contribute to discrepancies in trade statistics. However, the specific factors that have a disproportionately large influence on discrepancies in timber trade statistics include: 1) incompatible volume measurement systems, 2) level of reporting detail employed within the Harmonized Trade System (HTS), 3) allocation of transportation charges (FOB vs. CIF) in product valuation, 4) time lags between reported exports and reported imports, 5) incorrect or unknown specification of origin or destination of shipment (including triangular trade), 6) under-invoicing of exports, 7) mis-specification of wood products or timber species, and 8) illegal trade and smuggling.

Despite the fact that these factors may or may not contribute to discrepancies within the trade statistics, they distort the trade statistics and contribute to unsustainable forest management practices and policies while reinforcing negative perceptions of the timber industry and international timber trade. Therefore it is of paramount importance that timber trade statistics be as accurate as possible to facilitate sustainable forest management practices, support the development of responsible government policies relating to forest management and timber trade, and promote a more positive public perception of the international timber trade.

Results and Discussion

In order to evaluate the extent to which discrepancies in trade statistics occur within the forest products sector, trade matrices based on the value of trade for the major exporters and importers of logs, lumber, and plywood were compiled. The trade matrices were carefully designed to ensure that the countries included in the matrices would account for at least two-thirds of the global trade in each product category. The trade data for each country was obtained from the World Trade Atlas, an on-line searchable trade database. The statistics included in the World Trade Atlas are derived from the official statistics compiled and published by each country.

Trade values were used to calculate trade statistics discrepancy ratios between the value of product that a country reported importing from the exporting country and what the exporting country reported exporting to the importing country divided by the value of product that the country reported importing from the exporting country.

Discrepancies in the Trade Statistics for Lumber

While over two-thirds of lumber exports are provided by just seven countries, the global trade of lumber is dominated by Canada which generated 34.9% of global exports in 2001. Other important lumber exporting countries include Sweden (8.6%), the US (8.2%), Finland (5.9%), Russia (3.4%), Germany (3.4%), and Indonesia (2.8%). All of these countries were included in the lumber trade discrepancy analysis.

The largest bi-lateral lumber trade statistics discrepancy ratios were consistently observed with Indonesia, and to a much lesser extent, Malaysia, Austria, and Sweden, **Figure 1**. The average bi-lateral trade statistics discrepancy ratio for Indonesia was 0.84, ranging from -1.40 to 0.968. The trade data clearly demonstrates that Indonesian lumber export statistics consistently and substantially under-report the value of lumber exported to virtually all of their trading partners. The frequency diagram of the lumber bi-lateral trade statistics discrepancy ratios in **Figure 2** is centered on the 0-0.199 range of values and the mean value for this distribution was 0.226. Almost half of the discrepancy ratios (49.1%) were within 20% of zero compared to just 19.4% for logs and 26.3 for plywood. While approximately 18% of the discrepancy ratios exceed ±0.6, the lumber discrepancy distribution is nowhere near as skewed as that seen with the log discrepancy distribution.

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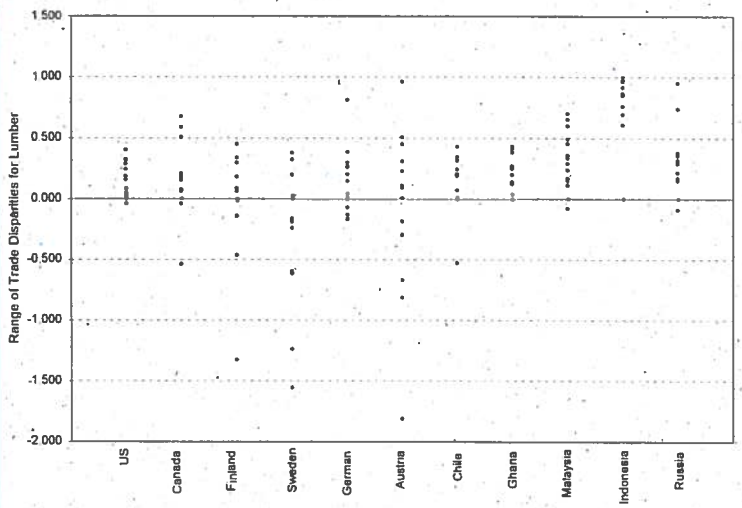

Figure 1: Scatter diagram of trade statistics discrepancy ratios for lumber.

Statistical tests were run to determine if there was a significant difference in the distribution of trade statistics discrepancy ratios: (1) between developed economies and less developed economies, and (2) across the three product categories. The expectation prior to running these tests was that the developed economies would have lower bi-lateral trade statistics discrepancy ratios. Similarly, we would expect to see smaller bi-lateral trade discrepancy ratios as the degree of product processing increased (i.e., plywood should be lower than lumber which should be lower than logs). This second hypothesis is supported by the fact that the aggregate FAO trade statistics for logs (0.221), lumber (0.104) and plywood (0.097) show declining ratios as the degree of processing increases.

The results of the first t-test test (developed economies vs. less developed economies) indicated that there was a statistical difference between developed and less developed economies for all products (p=.03), with the mean discrepancy ratio for less-developed economies being significantly higher than that of the developed economies. Further analysis indicated that at the individual product level there was a significant difference between developed and less developed economies for lumber (p=.000) but not for logs (p=.409) or plywood (p=.884).

The results of the second statistical test (logs vs. lumber vs. plywood) indicated that while there was a significant difference in the distribution of trade statistics discrepancy ratios for logs and lumber (p=.036) and logs and plywood (p=.052), there was not a significant difference in the trade statistics discrepancy ratios for lumber and plywood (p=.984). In addition, as discussed in the previous section, the average trade statistics discrepancy ratio for logs, lumber and plywood were found to be 0.387, 0.226, and 0.182. Thus we see that the trade statistics discrepancy ratio does indeed decline as the degree of processing increases and that the trade statistics discrepancy ratios for lumber and plywood are significantly lower than for logs.

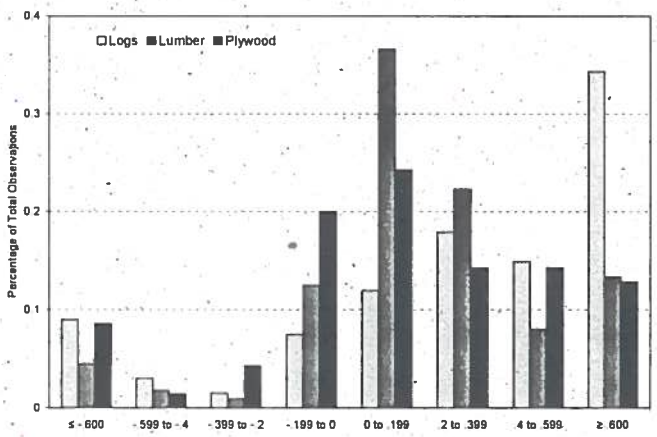

Figure 2: Distribution of trade discrepancy ratios for logs, lumber and plywood.

Conclusions

The analysis of the trade data demonstrates several characteristics of the trade statistics for forest products. First, the average discrepancy in the trade statistics is greater than zero and the discrepancy ratios become smaller as the degree of processing increases. Second, the majority of the discrepancy ratios observed for logs, lumber and plywood tended to be positive and concentrated above the average discrepancy ratio, indicating that in most cases the magnitude of the reported imports exceeded that of the reported exports. Third, there was a significant difference in the size of the discrepancy ratios observed between developed and less-developed economies across all products, although this difference was only significant in the case of lumber. Finally, the trade statistics were analyzed to establish what might loosely be described as a "normal" range of trade statistics discrepancies.