SESSION 8-Modeling Ghana's Trade with the USA-2012

Price Filter Methodology For Analysing Ghana and USA Trade data

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OBJECTIVE AND DATA SOURCE

I. **Objectives:**

    a. **Estimate the overinvoiced amount (amt_ov_w) and the underinvoiced amount (amt_un_w) in the U.S. export data using a US-World Price filters (upper quartile price "PUpQ" and lower quartile price "PUpQ").**

- Amt_ov_w = MAX(0, (price – PUpQ)*Quantity)

- Amt_un_w= MAX(0,(PLoQ – price)*Quantity)

    a. **Identify top 10 or 20 high-risk commodity groups (by HS10 and HS02)**

I. **Data source:** US Merchandise Trade: Exports – Monthly (2012)

- Web: https://www.census.gov/foreign-trade/statistics/dataproducts/index.html

COMPILATION STEPS

- The US Export data (**US_Exp_toGhana2012.xlsx**) include several fields: HS10 code (commodity), country code (cty_code), quantity (all_qy1_mo), and value (all_val_mo). The commodity names are on a separate reference table (**hs10x12.xlsx**). HS02 code can be extracted from HS10, but it also needs a reference table for HS02 (**HS02.xlsx**). The price filters are on its own table (**MTX1212X_Wrld.xlsx** based on US-World trade records and **MTX1212X_Ghana.xlsx** based on US-Ghana trade records.)

- It is necessary to model relating the US Export data (**US_Exp_toGhana2012.xlsx**) table to four other tables. This requires using a relational database tool. The Power Pivot in Excel is used in this exercise. Other tools such as Microsoft SQL Server, Oracle Database, MySQL, IBM DB2, and PostgreSQL are more efficient but has significant steep learning curve compared to Excel Power Pivot.

I. **Modeling PFM using Power Pivot for Ghana Export misinvoicing**
   a. **Open a new Excel blank workbook. Save it as PFM_US_X_to_Ghana.xlsx**

   - **(If Power Pivot is not activated, activate Power Pivot: File > Options > Add-ins > Select "Microsoft Power Pivot for Excel" from Inactive Application Add-ins list)**
   a. **Click "Power Pivot" from the ribbon**

Here is the diagram view of the completed model:
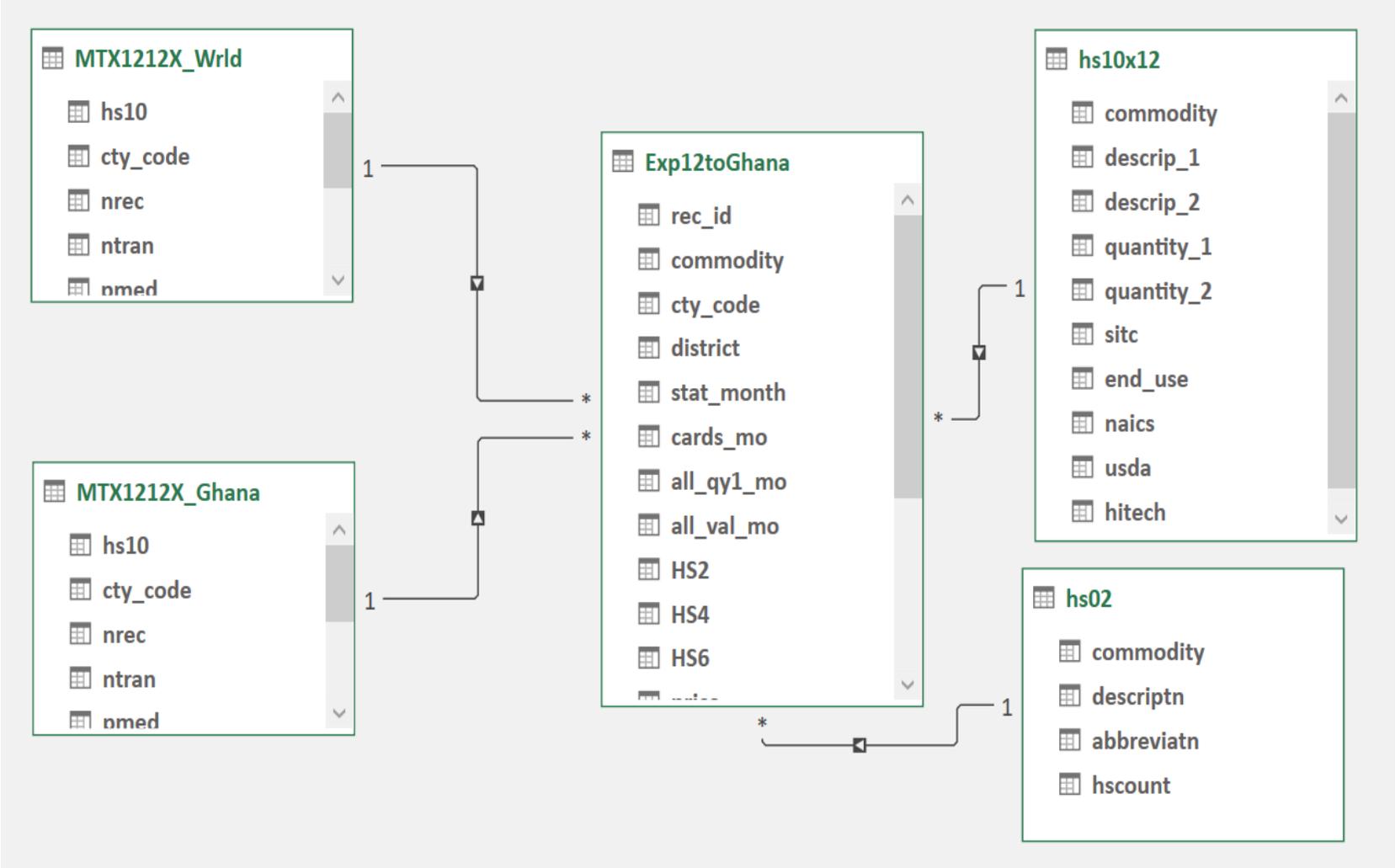
TO SUMMARISE

- Here are the steps you would generally follow in Excel with Power Pivot:

1. Import the Data:

1. Open Excel and import US_Exp_toGhana2012.xlsx, MTX1212X_Wrld.xlsx, MTX1212X_Ghana.xlsx, hs10x12.xlsx, and hs02.xlsx into Power Pivot. This would create different tables in the Power Pivot data model.

2. Create Relationships:

1. Establish relationships between these tables using the common fields such as HS10 codes and country codes.

3. Calculate Fields:

1. Calculate the price per unit for the US export data.
2. Determine PUpQ and PLoQ for each HS code from the world price data.
3. Calculate amt_ov_w and amt_un_w using the formulas provided.

4. Create a Pivot Table:

1. Insert a Pivot Table to summarize the data.
2. Use the Pivot Table to sort and identify the top high-risk commodities based on amt_un_w and amt_ov_w.

5. Export the Results:

1. Once you have the Pivot Table ready with the high-risk commodities, you can copy and paste the values into a new Excel sheet for reporting.