Data Analysis in Supervision of Customs Administration: Enforcement Assessing System

Fang Bin
Department of Statistics
China Customs
Agenda

- **About China Customs & Customs Statistics**
- Background of EAS System
- Introduction to EAS System
- Conclusion and Future Plan
China Customs Overview

- A State organ directly subordinated to the State Council
- 3-Level Hierarchy Structure
  - Customs General Administration
  - 41 Regional Customs
  - Over 300 Branches
- About 40,000 officers
Four Basic Tasks of China Customs

- Supervision and Control
- Duty Collection
- Anti-Smuggling
- Customs Statistics Compilation
China Customs Figures

- Comprehensive
- Reliable
- Internationally Comparable
### China trading status

<table>
<thead>
<tr>
<th>YEAR</th>
<th>EXPORT RANK</th>
<th>USD in billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>10</td>
<td>182.8</td>
</tr>
<tr>
<td>1998</td>
<td>9</td>
<td>183.7</td>
</tr>
<tr>
<td>1999</td>
<td>9</td>
<td>194.9</td>
</tr>
<tr>
<td>2000</td>
<td>7</td>
<td>249.2</td>
</tr>
<tr>
<td>2001</td>
<td>6</td>
<td>266.1</td>
</tr>
<tr>
<td>2002</td>
<td>5</td>
<td>325.6</td>
</tr>
</tbody>
</table>
Department of Statistics

- Compile Customs Statistics
  Official external merchandise trade statistics

- Statistical Analysis
  Decision Support Service

- Statistical Supervision
  - External:
    Trade activity/importers/exporters
  - Internal:
    Customs management (Enforcement Assessing)
Agenda

- About China Customs & Customs Statistics
- Background of EAS System
- Introduction to EAS System
- Conclusion and Future Plan
Background of EAS System

- Establish modern customs system
- Risk management
- Anti-smuggling
- Necessity for anti-corruption
Before EAS System

- Separated data sources
- Hidden information undiscovered
- Empirical judgment
Possibility of EAS

Customs Data Record:

- Procedure of External Trade
- Procedure and Result of Customs Management
Why We Choose SAS?

- Leading Technology
- Abundant modules
- Source code portability
- Long time good cooperation with SAS China
SAS Tools We Use

Features of the System:
- Diverse Data Sources
- Client/Server Approach

SAS Tools
- SAS/ACCESS ®
- SAS/CONNECT ®
- SAS/AF ®
- SAS/STAT ® software
- SAS/INSIGHT ®
- And more....
Agenda

- About China Customs & Customs Statistics
- Background of EAS System
- Introduction to EAS System
- Conclusion and Future Plan
Object and General Method

Object:
- To measure customs management status

General Method:
- Find indicator
- Find reasonable scope
- Calculating bias
- Bias judgment
- Evaluation and Alert
System Architecture

EAS

- Duty Collection
- Price
- Processing Trade
- Customs Logistics
DATA Flow Chart

Result & Alert

Subject DATA

Raw DATA

Pre-process

Trade Data
Duty Data
Other Data
Examples

- Duty Collection
  - Duty Stability using Correlation method
  - Customs Grouping using Clustering method

- Price
  - Rationality Scope using Distribution method
Example I: Duty Stability

By incorporating data from bank, paid duty, with data in the Customs, liable duty, we can analyze duty stability visually.
Example II: Customs Grouping

Different Customs has different import commodity structure.

Upper: import commodity centralize in lower duty rate section.

Lower: import commodity centralize in higher duty rate section.
Example II: Customs Grouping

Customs districts are clustered according to similarity of import commodity structure.
Example II: Customs Grouping

This group consists of 7 regional Customs.

One (or two) with lowest duty stability will be alerted.
Example III: Price Distribution

Price of a certain commodity will subject to normal distribution.
Extremely high or low price will be alerted.
Example III: Price Distribution
Example III: Price Distribution

In case of multi-peak distribution.

With SAS/Insight, it’s easy to find that under further limitation, say a certain origin country, price still subject to normal distribution.
EAS at present

- A scoring system, consists of 12 main indicators, is used to give comprehensive assessment to 41 regional customs.
- Quarterly alerts are publicized on the intranet.
Agenda

- About China Customs & Customs Statistics
- Background of EAS System
- Introduction to EAS System
- Conclusion and Future Plan
Conclusion and Future Plan

- After two years of usage ....
- Hidden administrative risks have been detected
- Duty retrieved in year 2002: $20million
- Distribute to 37 Regional Customs
- New system in progress ....
Appraise from Top Leaders

- Largest application based on SAS in China governmental organizations
- Symbolize 5\textsuperscript{th} phase (ultimate phase) of China Customs’ modernization progress
Many thanks to SAS China

Thank you all for your attention

Contact:
  fangbin@mail.customs.gov.cn

Questions?