Analysis of the Potential Impact of the AFTA on Lao Economy
- Macroeconomic Model Approach -

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Organized by UNESCAP and the WTO
26-30 March 2007, Bangkok, Thailand
Outlines of presentation

Problem Statements

Literature Reviews, and Research Questions

Objective and Approach

Characteristics of model and model flowchart

Flowchart of Simulation

Simulation Results

Conclusion and Policy Suggestions

Constraints of model
Problems Statements(1)

• Lao PDR participated in ASEAN in July 1997 and joined the AFTA in 1998.

• Lao PDR has to reduce its tariffs rate to 0-5% by 2008.

• Lao PDR will join the WTO (World Trade Organization) by 2010.

• Lao government expects to gain benefit from trade liberalization:
  - Increase export, FDI (foreign direct investment)
  - Increase economic growth, reduce poverty, etc.
Problems Statements (2)

• Macroeconomic instability.
  - Trade deficits and budget deficits.
  - External debt (high).

• Weak financial systems.
  - NPLs (Non-Performanced Loans) - high.
  - Low financial depth.

• Big economic development gap between Laos and other ASEAN members.
  - Increase trade deficits and budget deficits.
  - Destroy domestic enterprises, etc.
Budget Deficits

Problems Statements(2)
Trade Deficits

- **Problems Statements (2)**

- **Exports vs. Imports**
  - Mil. US$: 0, 100, 200, 300, 400, 500, 600, 700, 800, 900
## Government Revenues

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
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<tr>
<td><strong>Tax revenue</strong></td>
<td></td>
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<tr>
<td>Profit tax</td>
<td>13.17</td>
<td>10.06</td>
<td>8.12</td>
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<td>Income tax</td>
<td>6.61</td>
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<td>Land tax</td>
<td>0.92</td>
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<td>0.78</td>
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<td>Business licences</td>
<td>0.05</td>
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<td>0.05</td>
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<tr>
<td>Minimum tax</td>
<td>1.16</td>
<td>0.38</td>
<td>0.36</td>
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<td>Turnover tax</td>
<td>17.21</td>
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<td>21.96</td>
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<td>Excise taxes</td>
<td>14.68</td>
<td>16.75</td>
<td>18.11</td>
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<td><strong>Import duties</strong></td>
<td><strong>11.85</strong></td>
<td><strong>13.19</strong></td>
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<td>Export duties</td>
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<td>2.69</td>
<td>0.69</td>
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<td>Registration fees</td>
<td>0.58</td>
<td>0.63</td>
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<tr>
<td><strong>Other fees</strong></td>
<td><strong>4.92</strong></td>
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<td>Natural Resources taxes</td>
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<td>Timber royalties</td>
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<td>Hydro-power royalties</td>
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<td>1.68</td>
<td>1.60</td>
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<td>Nontax revenues</td>
<td>17.47</td>
<td>14.58</td>
<td>17.20</td>
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<tr>
<td><strong>Total</strong></td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
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Research Questions

• Can Laos gain the benefit from joining AFTA?

• How much the impact of AFTA on:
  - General price?
  - Trade?
  - Government tax revenues?
  - GDP?

• What is the policy suggestion for gaining more benefit?
Literature Reviews

There are few studies of quantitative analysis for the Lao economy.

- Phouphet KYOPHILAVONG (2003) built first Lao macroeconomic model to analyze the impact of monetary/fiscal policy, FDI and AFTA on Lao economy.

- Fukase and Martin (1999) built a simple CGE model to analyze the economic effect of joining the AFTA.

- Peter Warr (2004) built a two sectors, multi-household CGE Model to analyze the impact of the hydropower dam (NT2).
Research Objective

Lack of Research on the effect of AFTA to Lao economy

The effect of AFTA on Lao economy is unclear

Research Background

Joined ASEAN, AFTA (1998) → Decreasing Tariff to 0~5%

Build Macroeconomic Model

Analyze the potential impact of AFTA

Suggest Economic Policy
Choosing Laos’s Model

Depends on Supply-Side

- Lack of Capital

Growth is Important

- Supply-Side Model (Long Term)

Asia Crisis (1997)

- High Inflation, Kip Devaluation

Stability is Important

- Demand-Side Model (Short-Term)

Demand and Supply-Side Model
Characteristics of Model

Assumptions

1. Structure of the Lao economy likes of capitalism countries.
2. The Lao data system is nearly the same as SNA.

3. This model base on demand and supply side.

4. The supply side GDP is divided into agricultural GDP and non-agricultural GDP.

5. This model consists of 10 structural equations and 15 definitions and statistic equations.

6. Two stages OLS for estimation, used Newton method to solved the model- Using TSP software.
Model Flowchart

- Agriculture Population
- Agriculture Area
- World demand
- Export
- Import
- Domestic Investment
- FDI
- Lending Rate
- Private Consumption
- General Price
- Government Consumption
- Government Investment
- Government Revenue
- Tax Revenue
- Non Tax Revenue
- Money Supply
- Exchange Rate
- Import Price
- Non-Agriculture Population
- Capital Stock
- Non-Agriculture Population
- Total Population
- Wage
- Exogenous
- Endogenous

Source: the author
## Model Evaluation

### Table 1: RMSE of Total Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>RMSE</th>
<th>Variable</th>
<th>RMSE</th>
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<tbody>
<tr>
<td>GDP</td>
<td>2.47</td>
<td>WAGE</td>
<td>2.19</td>
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<tr>
<td>PL</td>
<td>12.38</td>
<td>LN</td>
<td>0.29</td>
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<tr>
<td>CP</td>
<td>3.60</td>
<td>NP</td>
<td>0.06</td>
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<td>CG</td>
<td>8.93</td>
<td>DTAX</td>
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<td>EX</td>
<td>8.71</td>
<td>REV</td>
<td>3.80</td>
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<td>IMT</td>
<td>20.05</td>
<td>DI</td>
<td>15.26</td>
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<td>11.83</td>
<td>IG</td>
<td>12.08</td>
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<td>GDPP</td>
<td>10.58</td>
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<td>8.39</td>
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<tr>
<td>GNP</td>
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</tbody>
</table>

### Model Analysis

- **GDP**: Price of RMSE is Low
- **Real Value and Calculate Value are Similar**
- **This Model Can be Applied to Analyze the Lao Economy**

### Graph

Fig 1: Real Value and Calculate Value

- **GDPS**
- **GDPR**
- **PLS**
- **PLR**

- Year: 1989 to 2001
- Y-axis: Value ranging from 0 to 2000,000
Analysis the Effect of AFTA (assumption)

Joined in ASEAN, AFTA (1998)

Reduce Tariff Rate to 0 ~ 5%

Model does not Include Tariff Rate

Assume Import Price Decreases to 5%

Using Model to Simulate

Make Clear the Effect of AFTA on the Lao Economy

Policy Suggestions
Simulation Flowchart

- Agriculture Population
- Agriculture Area
- Agriculture
- Non-Agriculture Population
- Non-Agriculture
- Capital Stock
- Total Population
- Wage
- World demand
- Potential GDP
- Demand GDP
- Export
- Import
- Domestic Investment
- FDI
- Lending Rate
- Private Consumption
- General Price
- Government Consumption
- Government Investment
- Import Price
- Money Supply
- Exchange Rate
- Government Revenue
- Tax Revenue
- Non Tax Revenue

Source: the author
## Simulation Result

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<tbody>
<tr>
<td>CP</td>
<td>0.12</td>
<td>0.19</td>
<td>0.28</td>
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<tr>
<td>EX</td>
<td>-0.06</td>
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<tr>
<td>GDP</td>
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<tr>
<td>IM</td>
<td>0.38</td>
<td>0.39</td>
<td>0.52</td>
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<tr>
<td>I</td>
<td>0.38</td>
<td>0.30</td>
<td>0.47</td>
</tr>
<tr>
<td>PL</td>
<td>-0.51</td>
<td>-0.59</td>
<td>-0.71</td>
</tr>
<tr>
<td>WAGE</td>
<td>0.14</td>
<td>0.14</td>
<td>0.21</td>
</tr>
</tbody>
</table>

- **The Effect on Price** → Decrease
- **The Effect on Export** → Low Decrease
- **The Effect on Import** → Low Increase
- **The Effect to GDP** → Low Increase
Conclusion

The AFTA will lead to

- increase import and decrease export.
- larger trade and budget deficits.
- decrease general price.
- increase GDP growth, but small.

It is difficult to say that Laos will gain substantial benefits from the AFTA. Moreover, the benefit of the AFTA will be negative.
Policy Suggestions

• Promote and support small and medium enterprises (SMEs) to improve their comparative advantage for increasing exports.

• Provide more incentives to increase FDI in the long run for increasing exports.

• Reform the domestic tax and collection system to promote greater efficiently.

• Solve non-tariff barrier (NTB) in domestic and neighbor Countries.

• Solve transport oligopoly that governs transit trade through neighbor countries.
Constraints of model

1. Market Economy
   - Transitional Economy
   - Natural Economy

2. Data
   - Lack of Data
   - Accuracy is Low

3. ASIA Crisis
   - Effect of AFTA is not accurate

4. Model
   - Does not include debt
   - Monetary Sector, linking-macro model
Thank You Very Much for Attention