The Effect Of Freight And Passenger Services On Transport And Its Implication On Indonesia’s Services Trade Balance

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Abstract
In several recent years, Indonesia’s services trade balance which is reported by Bank Indonesia was shown negative figures. Transport has greatly contributed to Indonesia’s services trade balance deficit. Transport consist of freight, passenger services and other. The negative figures of transport mainly caused by freight. According to this phenomenon, this research tries to analyze the effect of freight and passenger services on transport and its implication on Indonesia's services trade balance. This research based on quarterly data from 1st quarter 2005 to 3rd quarter 2018. Data analysis and hypotheses testing using EViews 10. This study will prove which variables have the most influence on Indonesia's service trade balance

Keywords: Freight, passenger services, transport, services trade balance

1. Introduction
Indonesia, as a country in the Southeast Asia region, needs to criticize every aspect of the Indonesian economy to accelerate national economic development. Services Trade Balance which is a reflection of net export & import services, is one of the important aspects in the Current Account which is part of Indonesia's Balance of Payments. Positive services trade balance, will contribute to enhance state financial capabilities for national development. Conversely, a negative services trade balance will burden the balance of payments. A very possible effort to reduce or minimize the negative numbers of the trade balance of services is to reduce the negative transport numbers. This study will discuss how far the effect of freight and passenger services on transport and its implication on the services trade balance

Based on Indonesia’s Balance of Payment (Summary), there are 3 main account namely Current Account (include: goods, services, primary income and secondary income), Capital Account (receipts and payments) and Financial Account (include direct investment, portfolio investment, financial derivatives, and other investment).

Furthermore Current Account of Goods, consist of general merchandise (include non-oil and gas as well as oil and gas) and other goods. While Current Account of Services include elements namely: Manufacturing services, Maintenance and repair services, Transport, Travel, Construction, Insurance and pension services, Financial services, Charges for the use of intellectual property, Telecommunication, computer and information services, Other Business Services, Personal, Cultural, and recrea-
Literature Review

Freight refer to the transportation of goods and almost always related to the export and import of goods. Goods transportation services also include the cost of loading and unloading goods, from and to the shipping vessel at the port if required in the contract. Freight is generally used as an overarching term that includes all activities related to the movement and coordination of goods from their source of origin to the final point of delivery, and includes production and distribution. Here, movement does not just correspond to physical movement of goods but also the flow of information (Bektas, 2017).

Freight transport is an essential part of our economy as it fulfills a unique service within supply chains, bridging the distances between spatially separated places of supply and demand. As is the case with passenger transport, accessibility of places for freight is vital or the economic development of society. Freight transport has been growing continuously in the past, due to an increase in population, falling trade barriers and declining transport costs. In addition, the growth of freight flows is propelled by increasing consumption levels and the customisation of products and services. This growth has been facilitated by major infrastructure extensions including roads, railways, waterways, ports and storage and transhipment activities (Tavasszy & Jong, 2014).

National income and expenditure is included in the main macroeconomic scope. The macroeconomic variables consist of:

- National income level
- Household consumption

Figure 1. Services Net from 2005 to 2018 (Q3)
• National Investment (government / private)
• Savings rate
• Government expenditure
• Price levels
• Money supply (inflation)
• Interest rate
• Employment Opportunity
• State budget and expenditure budget (APBN)
• Balance of payments (export and import)

(source: https://www.zonareferensi.com/ruang-lingkup-ekonomi-makro)

There are 3 national income calculation methods (https://brainly.co.id) namely:

1. Production Approach
   The Production Approach formula is as follows:
   \[ Y = (P1 \times Q1) + (P2 \times Q2) + \ldots (Pn \times Qn) \]
   \( Y \) = National Income, \( P \) = Price, \( Q \) = Quantity.

2. Income Approach
   The Income Approach formula is as follows:
   \[ Y = r + w + i + p \]
   \( Y \) = National Income
   \( r \) = Income from wages, salaries, and more
   \( w \) = Net income from rent
   \( i \) = Interest income
   \( p \) = Income from profits of companies and individual businesses

3. Expenditure Approach
   The Expenditure Approach formula is as follows:
   \[ Y = C + I + G + (X - M) \]
   \( Y \) = National income
   \( C \) = Consumption (household consumption)
   \( I \) = Investment
   \( G \) = Government expenditure
   \( X \) = Export
   \( M \) = Import

Based on the above description, and in line with Keynes's theory for an open economy and according to Mc.Eachern (1997) and Andolfatto (2005: 8) that the national income equation is: \( Y = C + I + G + (X - M) \), this research will examines (X-M), especially in terms of transportation services in international trade.

Indonesia's balance of payments reported by Bank Indonesia states that there are current accounts for goods and services, which are export and import trade figures for goods and services. This study only examines the current account of services, especially transportation services.

The realization of (X-M) in the balance of payments (current account), can be described as goods trade balance (GTB) and services trade balance (STB). The definition here is the result of export - import for each element. Thus the formula (X - M) can be written with: \( (X - M) = GTB + STB \).

Variables that possible to be observed in the services trade balance (STB) among others transport (including passenger, freight), insurances and pension services, charges for the use of intellectual property and other business services. In this study observations were carried out only for variables transport (including its component) which are significantly contributed negative figures in the services trade balance. Therefore this study examine variables transport (including its component) which are significantly contributed negative figures in the services trade balance.

Based on the above description, this study presents the conceptual framework...
The variables in this study are as follows:

FR (X1) = Freight
PS (X2) = Passenger services
TRS (Y1) = Transport
SERV (Y2) = Services Trade Balance

The unobserved variables related to transport and services trade balance, may be can be used as reference for the next study.

4. Discussion
Data analysis
The data to be analyzed is data from variables: freight (FR), passenger services (PS), transport (TRS), and services trade balance (SERV) from 1st quarter 2005 to 3rd quarter of 2018. As shown on figure 3, the negative numbers reflected the deficit.
Unit Root Test

Unit root test (Augmented Dickey-Fuller test statistic) is used to test stationary data.

The result of unit root test using ADF test, each variable as follows:

a. Freight (X1), prob. > 0.05 means the data is not stationary.
b. Passenger services (X2), prob < 0.05 means the data is stationary.
c. Transport (Y1), prob < 0.05 means the data is stationary.
d. Services trade balance (Y2), prob. > 0.05 means the data is not stationary.

Due to some data stationary and not stationary, then statistical tests using VAR and ECM. The steps as follows:

1. VAR Stability Condition Check
2. Optimum Lag Test
3. Cointegration Test
4. Vector Error Correction Model

VAR Stability Condition Check

The calculation results in checking on a stable VAR condition can be seen in the following figure 5.

Figure 5. root test using ADF

Based on the above result, t statistics > 1.96 (at level $\alpha = 5\%$) means variables X1 and X2 have an effect on Y1. The other words freight and passenger services have an effect on Transport. In more detail, the effect of freight on transport is greater than the effect of passenger service on transport, which is reflected in the coefficient of 0.782 X1 (freight) and 0.228 X2 (passenger service).
**Vector Error Correction Model**

The calculation results in checking on a stable Vector Error Correction can be seen in the following figure 6.

**Cointegration Test (Y2, Y1)**

The calculation results in checking on a stable Cointegration Test can be seen in the following figure 7.

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