# Trade margin in national accounts: effectiveness of commodity flow approach for credibility escalation

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**Abstract:**

*In this age of liberalization, globalization and privatization, trade has covered a significant impact in the economic development. It is utmost important to measure this figure efficiently in order to provide the true reflection of the economy. The robust national accounts hence prepared are the important basis for the fulfillment of the SDG targets 8.1, 8.9, 17.1, 17.4 and 17.13. It is viewed that there are generally two approach of computing value added of trade i.e. establishment approach and commodity flow approach. In the least developed countries like Nepal, where the data sharing culture is not well enough and more than half of the establishment are not registered, the establishment approach is not likely to cover the generated trade service. In this regard, the commodity flow approach is likely to provide more true estimates. This study is moreover the comparative analysis of the value added of trade, derived from the establishment and commodity flow approach. We have economic census conducted in 2018 which provide the information of the establishments. Similarly, commodity flow approach has been used for the data of agriculture production, manufacturing production and imported goods derived from various source. The Nepal living standard survey(NLSS) and Census of manufacturing establishment(CME) provides the sales weight in order to derive the tradable volume for the production. The distributive trade survey(DTS) or trade margin survey has been used in order to compute the trade margin. It is observed that the figures obtained from the commodity flow approach are found significantly stronger than that of establishment approach. In-spite of being the largest contributors in terms of establishment of more than 50 percent, the information as revealed by the establishments is not adequate to reflect the trade activities. However, in the era of big data analytics, remote sensing and web scraping, it is mandatory to enrich the data quality of the establishments for the statistical enhancement, improvement and fulfillment of the SDG goals.*

*Keywords: comparative analysis, computing methodology, data enrichment, Sustainable development goals*

## 1. Introduction

The trade activities play an important role in the economic growth of the nation. It has the significant share in gross domestic product(GVA). The trade is contributing about 15 percent in the overall gross value added of Nepal. The demonstration effect on the people's livelihood due to the liberalization and globalization has created a huge demand for branded goods and services from all over the globe. Nepal has not lagged behind in this regard.[1] The imported goods cover almost 50% of the total trade. Similarly, 29% tradable volume is supplied from agricultural production and 16% of the tradable volume is supplied from the manufacturing production (Central Bureau of Statistics, 2019). Hence, it is utmost important to gauge the reflection of the value added of trade in gross domestic product. Trade margin

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[1] Nepal formally adopted the policy of liberalization, privatization and globalization after the restoration of multiparty democracy in the early 1990s as the forerunner of globalization in the South Asian region. (Khanal , 2017) The accession of Nepal to the WTO in 2004 accelerated the process of globalization. Nepal has gained some genuine benefits and opportunities from globalization, but in small areas and amounts. As economic reports and indicators reveal, the per capita GNI increased from $185 in 1990 to $1047 in 2019 and the size of the GDP has expanded manifold since then. Furthermore, the extent of absolute poverty has reduced from 49 per cent to 23.8 per cent during that period.

is the output of the trade related establishments. It is defined as the difference between actual or imputed price realized on a goods purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of (United Nation, 2008). In other words, the expenses incurred for buying goods for resale and revenue obtained by selling the purchased goods. This margin need to be captured effectively in order to maintain the accuracy and ensure robustness of the GDP estimates. in the national account estimates. The robust national accounts hence prepared are the important basis for the computation of the SDG indicators 8.1.1[2], 8.9.1[3], 17.1[4], 17.4[5] and 17.13[6]. This paper is an explicit description of the methodology adopted in computing trade margin in Nepal. Also, this is an attempt to discuss the findings of the estimates obtained from the alternative approach.

## 2. Methodology

There are generally two approaches of measuring the value added of trade: Commodity flow approach and Establishment approach. The use of the methods depends upon extent of technology adopted by the nation, state of coordination with the stakeholders, statistical literacy of the users and data providers and other statistical infrastructures. The commodity flow approach is a predominant method that is being used by Nepal in computing the GVA of trade. Therefore, the methodology discussed here is the practical experience of Nepal. However, the methodology regarding the establishment is an author's attempt to derive the GVA. The two methods are discussed hereunder.

### 2.1. Commodity flow approach

Commodity flow approach measures the trade margin on the basis of supply of goods in the market rather than the output of establishments. In the less digitalized and partially monetized economy, this approach effectively captures trade margin. Depending upon the economies, there are various modes of supply of goods that go to trade. In case of Nepal, the goods for trade are supplied from three major sources i.e. domestic agricultural production, domestic manufacturing production and imported goods.

### 2.1.1. Data sources

The major data sources for this approach are the Ministry of Agriculture and Livestock, Ministry of Industrial Supplies and Commerce, Department of Custom and the National Statistics Office(NSO). The domestic agriculture production data are supplied by the Ministry of Agriculture and Livestock. The district offices located in the districts acts as a facilitator for the data collection in the respective quarters. The Ministry of industrial supplies and commerce manages the updated list of the industries that become helpful for the NSO in order the compute the manufacturing production. The NSO conducts quarterly survey for estimating manufacturing production estimates. The NSO is responsible for conducting all types of agriculture census and manufacturing census. Along with this, NSO conducts trade margin survey in order to derive the trade margin of the commodities that goes to trade. Similarly, the department of custom provides quarterly import and export information.

### 2.1.2. Sales weight and surveys

All the commodities produced by the farmers, manufacturing industries as well as imported goods do not go to trade. The producer keeps certain percentage for their own use. Hence, it is necessary to know about the sales weight. The information on the sales weight is obtained from the census and surveys. Nepal living standard survey(NLSS) is an important base in order to compute the tradeable volume of agriculture production. The total agriculture production cannot not go to trade. They keep some amount of production for the seedling purpose, for own account consumption and for speculative motives as

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[2] 8.1.1 Annual growth rate of real GDP per capita
[3] 8.9.1. Tourism direct GDP as a proportion of total GDP and in growth rate
[4] 17.1.1 Total government revenue as a proportion of GDP, by source & 17.1.2 Proportion of domestic budget funded by domestic taxes
[5] 17.4.1 Debt service as a proportion of exports of goods and services
[6] 17.13.1 Macroeconomic dashboard (United Nations, 2017)

well. Therefore, the sales weight is generated through the information as provided by NLSS. This sales weight is used for the total agricultural production in order to compute tradable volume of domestic agricultural production that goes to trade. The Census of Manufacturing Establishment(CME) captures the information of Manufacturing Establishments i.e. industries in Nepal. The NSO of Nepal conducts this census in every five years' interval. Similarly, SSME is the Survey of Small Scale Manufacturing Establishment conducts in a regular time period in every 10 years' interval which captures the information of Small Manufacturing Establishments. This census and survey also provides the information on the stocks. After adjusting the stocks on the total manufacturing production, the tradeable volume is estimated.

### 2.1.3. Trade margin survey

The Distributive Trade Survey(DTS) or trade margin survey provides the commodity wise trade margin. Trade margin is the output of the wholesale and retail trade (United Nation, 2008). The margin obtained by the seller by reselling the items purchased from the firms or producers is the trade margin. The goods are traded in three levels in Nepal i.e. dealer, wholesaler and retailer. The Survey provides the commodity-wise margin for all level of trade. This is the ad-hoc survey conducted when needed. This is generally conducted in order to rebase the national accounts series in Nepal.

### 2.1.4. Computation methodology

The tradable volume is obtained from the total production of goods as obtained from the domestic agricultural production, manufacturing production and imported goods. It is derived by using the sales weight on the production. The trade margin survey gives the commodity wise trade margin. The ratios are hence applied in order to compute the output of the trade.

Mathematically,

$$S_t = f(D_A, D_M, IM) \tag{1}$$

where, $S_t$ denotes the total supply of goods for tradable purpose, $D_A$ refers to the supply from agriculture production, $D_M$, refers to the supply from domestic manufacturing production and $IM$ refers to the supply from import.

$$TV_A = D_A * sw_a \tag{2}$$
$$TV_M = D_M * sw_m \tag{3}$$

where, $sw_a$ refers to the sales weight of agriculture production and $sw_m$ refers to the sales weight of manufacturing production. $TV_A$ & $TV_M$ refers to the tradable volume of agricultural and manufacturing production.

$$TTM = (TV_{a,i} * tm_{a,i}) + (TV_{m,i} * tm_{m,i}) + (TV_{imp,i} * tm_{imp,i}) \tag{4}$$

where, $TTM$ is the total trade margin or the output of trade. $TV_{a,i}, TV_{m,i}$ & $TV_{imp,i}$ refers to commodity wise tradable volume of agriculture production, manufacturing production and tradable volume of import that goes to trade. Similarly, $tm_{a,i}, tm_{m,i}$ & $tm_{imp,i}$ refers to the commodity wise trade margin ratio.

### 2.2. Establishment approach:

In this approach, trade margin is computed on the basis of information as revealed by the regular survey or census. An establishment is an enterprise, or part of an enterprise, that is situated is a single location and in which only a single productive activity is carried out or in which the principle productive activity account for most of the value added (United Nation, 2008). Nepal has conducted first ever economic census in 2018/19. It has become a huge milestone in order to provide the business register of the establishment. In this regard, the questionnaire of the economic census is observed for the analysis. The questions were asked on the generated revenue and expenses incurred by the establishment. The expenses are of two types: expenses for compensation of employee and general expenses. Hence, the value added for the establishment is derived through income approach. Therefore, the Compensation of

Employee(CE)[7] and Operating Surplus(OS) or Mixed Income(MI)[8] is added to obtain the value added of the trade conducting establishments.

$$OS \ or \ MI = revenue - expenses \ incurred(excluding \ CE) \qquad (5)$$
$$gross \ value \ added = CE + OS \ or \ MI \qquad (6)$$

## 3. Data analysis

The paper is moreover comparative analysis of the value added of trade estimated through the commodity flow approach and establishment approach. The questions were asked to the establishments for the transactions in 2017/18. Hence, the estimated value through commodity flow approach is compared with the analyzed value of the trade establishments. The income and expenses of the establishments as per the ISIC rev 4[9] classification is analyzed through STATA 15.

Table 3.1. Aggregates from the establishment approach

| ISIC Rev4 (G) | Sub-division | Number of establishments | Revenue | Expenses excluding CE | CE | OS/MI | GVA |
|---|---|---|---|---|---|---|---|
| 45 | Sale of Motor vehicles, repairs and parts | 16835 | 234873 | 128336 | 6322 | 106536 | 112858 |
| 46 | Wholesale trade | 14933 | 347569 | 195236 | 7290 | 152333 | 159623 |
| 47 | Retail trade | 466297 | 1813087 | 2056921 | 270678 | -243834 | 26843 |
| | Grand total | 498065 | 2395529 | 2380494 | 284289 | 15035 | 299324 |

Source: Authors calculation based on (CBS, 2019) & Census data.

The table 3.2 reveals that the information of the trade establishments are extracted as per the ISIC rev 4 sub-division. Among the divisions, the Retailers has the significantly higher portion in case of the number, revenue earned, compensation of employee, expenses incurred. But if we see GVA, the share is very insignificant. Also, the OS/MI of the retailer is negative. However, the OS/MI and the GVA of the rest of the divisions is significant and positive.

Table 3.2 Aggregates from the commodity flow approach (Mediums of supply)

| Mediums of supply | output | IC | GVA | OS |
|---|---|---|---|---|
| Agriculture trade | 132122.6 | 21845.3 | 110277.3 | 61162.9 |
| Manufacturing trade | 72433.2 | 11976.2 | 60457.0 | 33531.2 |
| Import trade | 251996.8 | 41665.4 | 210331.4 | 116655.7 |
| Total | 456552.5 | 75486.8 | 381065.8 | 211349.8 |

Source: Authors calculation based on (CBS, 2019)

The table 3.2. reveals the aggregates through commodity flow approach from supply side. As discussed above, the commodities that goes to trade in Nepal are supplied from three mediums. The import trade comprises of the 55 percent share in the value added of trade followed by domestic agriculture trade 29 percent and 16 percent by domestic manufacturing trade.

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[7] CE is the total remuneration, in cash or in kind payable by an enterprise to an employee in return for work done by the latter during the accounting period. (OECD, 2014)

[8] OS measures the surplus or deficit accruing from the production before taking into account of any interest rent or similar charges payable on financial or tangible non produced assets borrowed or rented by the enterprises, or any interest, rent or similar receipts receivables on financial or tangible non produced assets own by the enterprises. For unincorporated enterprises owned by household, this component is called MI.

[9] It refers to the international standard industrial classification revision 4. As per the ISIC rev 4, there are 21 industries including wholesale and retail trade or simply trade.

Table 3.3. Aggregates from commodity flow approach (forms of trade)

| Forms of trade | Output | IC[10] | GVA | OS |
|---|---|---|---|---|
| Wholesale trade | 118703.7 | 19626.6 | 99077.1 | 54951.0 |
| Retail trade | 337848.9 | 55860.2 | 156398.9 | 156398.9 |
| Total | 456552.5 | 75486.8 | 255476.0 | 211349.8 |

Source: Authors calculation based on (CBS, 2019)

The table 3.3. reveals that aggregates in terms of forms of trade i.e. wholesaler and retailer based information as provided by the trade margin survey. It shows the share of the wholesaler in the GVA of trade is 38 percent and rest 62 percent share is of retailer. Similarly, the share of OS/MI of the retailer is 26 percent and rest 74 percent is of retailer.

## 4. Findings and conclusions

The estimate obtained from the establishment approach and commodity flow approach are not comparable directly. But some insights can be developed and inference can be drawn from the observation and analysis. Hence, the GVA estimates as well as OS/MI estimates are compared hereunder. The census is conducted in 2018. Hence, the estimated of the establishments are compared to the published value of the GVA of trade. The GVA from the establishment approach is based on the income approach as provided in the identity (6) & (5). But the GVA for the commodity flow approach is computed based on the identity (1), (2), (3) & (4). The GVA at current price from the establishment approach is 299.3 billion whereas it was 381.06 billion from commodity flow approach. It shows that the GVA of commodity flow approach is greater by 27.31%. With regard to the estimate for OS/MI from the establishment approach, it is observed to have 15.03 billion whereas the OS/MI from the establishment approach is observed to have 211.35 billion. It shows that there is discrepancy of 1305%. The data for OS/MI reveals that corporate sector are highly reluctant to provide the company profit or income as provided by the information from economic census.

Also, there is significant difference between the ratio of OS/MI to GVA from both approach. If we observe the ratio from establishment approach, it is about 5%. But, when we observe the ratio from commodity flow approach, it is about 55%. As per the information obtained from the National economic census, there are altogether 9,23,356 establishments. Out of theses, 54% of the establishments are conducting trade related activities. Also, among the establishments, 45% are registered and 55% are not registered. In this regard, the 5% ratio between the OS/MI and the GVA is bit insignificant.

## 5. Limitations and recommendation

Both the approaches are equally important and usable for any economies. The extent of technology, level of statistical literacy and statistical infrastructures are the main drivers to choose. Nepal is predominantly using commodity flow approach. As per the information of NEC 2018, 55% of the establishments are not registered. This is a difficult situation to use the establishment approach for computing the trade activities. The most important aspect is the tendency of the establishment to show the high expenses side and low income side. This create a vulnerable situation for the data analyst. If the respondents respond accordingly, the establishments survey/census just become a mere paper work. However, if the country has significant registered number of the establishments, strict rules that go beyond the rule and law, they can use the establishment approach. This can be done through big data analytics tools like web scraping, remote sensing etc. Similarly, the commodity flow approach measures the trade estimates based on the supply of tradable commodity. But the important aspect of this approach is the computation of tradeable volume, trade margin and the information of the stocks of the

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[10] IC refers to the intermediate consumption which includes the value of goods and services used as inputs during the process of production. The goods and services either may be transformed or used up by the production JUON process (OECD, 2014).

establishment. Hence, the sales weight and trade margin need to captured very effectively in a regular time period. Along with this, the information of the stocks maintained by the establishments also plays an important role in trade. As for instant, during the locked down, border blocked and other abnormal situation for 2-3 months, the stocks maintained by the establishments going to work as normal. Hence, the stock information plays vital role in case of commodity flow approach.

Considering all the above things into account, the estimates from the commodity flow approach are found comparatively strong than that of the establishment approach. Nepal is conducting regular surveys which provide the sales weight. Similarly, trade margin survey is providing trade margin ratio, intermediate consumption ratio and stock information in a regular time period. On the other hand, the first ever conducted the National economics census has provided the information of the establishment. It has become a milestone in creating a statistical business register in Nepal. However, the transaction of income and expenses provided by the census is very hard to accept. It is observed that the income is suppressed and the expenses and CE is exaggerated by the establishment. Due to this, the retailers having 93% share is having negative OS/MI. In this regard, it is wise to use the commodity flow approach.

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