DRIVING VALUE

Grab's Economic Contribution to Malaysia

Methodological Note

ECONWORKS

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Preface

This study aims to measure the total economic contribution of Grab's mobility and delivery services to the Malaysian economy. The study findings are in the main document titled *"Driving Value: Grab's Economic Contribution to Malaysia*".

This methodological note provides detailed information on our research approach, including the data sources, computational steps, assumptions, and caveats we consider when interpreting our findings. This methodological note helps interested readers have a deeper understanding of the process behind our analysis.

This methodological note is organized into three main sections:

- An introduction to Input-Output (I-O) analysis, its application, and its limitations.
- Steps to estimate the economic multipliers and impact of Grab's services.
- Robustness checks and consideration of alternative analytical approaches.

While we aim to provide as much information as possible, specific details may be omitted due to confidentiality or commercial sensitivity. Nevertheless, most of the data used in this analysis are publicly accessible on the Department of Statistics Malaysia's (DOSM) website.

Data Sources

To estimate the economic impact of Grab's activities, we rely primarily on two data sources:

- Malaysia's latest I-O tables (2023) published by DOSM, which contain economic data covering up to 2021. We specifically use the 124 Activity x 124 Activity Absorption Matrix as our primary reference, supplemented where necessary by additional supporting information from related I-O tables.
- Grab's financial data for the 2023 financial year (FY2023), covering revenues (Gross Merchandise Value) generated in Malaysia. These include those from Grab's mobility and delivery services (GrabCar, GrabFood, GrabExpress, and GrabMart). These data are segmented according to their respective recipients: Grab itself, driver-partners, and merchant-partners.

Additional supporting data, such as Malaysia's gross domestic product (GDP), labour force statistics, and median formal sector salary, are sourced directly from official statistics published by DOSM.

Overview of Input-Output Analysis

The I-O analysis is a widely used economic modelling framework that examines the relationships between industries in an economy. By mapping out how sectors interact through the production and consumption of goods and services, I-O analysis helps quantify how changes in demand ripple across different industries.

I-O analysis relies on I-O tables, which provide detailed records of economic transactions between sectors. These tables are demand-driven, assuming that sectoral outputs adjust flexibly to meet final demand. While this structure makes I-O analysis an effective tool for measuring economic impact, it is based on several simplifying assumptions that must be carefully considered when interpreting results.

Introduction to I-O Tables and Analysis

An I-O analysis is based on the I-O tables, typically published by national statistical authorities such as DOSM on a multi-year basis. These tables provide a structured way to analyze how different economic sectors interact by purchasing and selling goods and services. The key components of I-O tables are:[1]

- **Intermediate inputs,** which refer to the goods and services purchased by each economic sector to produce its output. In Malaysia's I-O tables, the economy is categorized into 124 sectors, with data indicating how much each sector purchases from all other sectors, including from itself.
- **Value added,** which is the difference between a sector's total output value and the cost of intermediate input used in production. It comprises three components: compensation of employees (COE), gross operating surplus of firms, and net taxes on production.
- **Final demand** represents the end users or ultimate consumers of outputs produced by economic sectors. It is categorized into private household consumption, public sector consumption, and exports.[2]

By using this structure, I-O analysis employs a "double-entry" accounting system, tracking how economic outputs flow from the supplying sectors to the sectors or consumers who use them. This method allows us to quantify how an initial increase in demand within one sector (for example, consumers spending more on transport services) generates additional economic activity across other economic sectors.

[1] Kowalewski (2009) *Methodology of the Input-Output Analysis*
[2] Ardent et al (2009) *Application of the IO Methodology to the Energy and Environmental Analysis of a Regional Context*

The logic behind this process is that increased consumer spending initially benefits a particular sector (direct effect). To meet this demand, firms within that sector must purchase more inputs (goods and services) from other sectors (indirect effects). As these other sectors experience higher sales, they, in turn, also increase their own input purchases, creating additional rounds of spending. This ripple effect across multiple sectors amplifies or "multiplies" the initial economic impact, producing more demand across different economic sectors.

The information in the I-O tables is demand-driven as the assumption is for the sources and structure of final demand to remain constant or fixed, based on the year the data were collected (the reference year). Sector outputs are assumed to adjust flexibly to meet any changes in demand. Although this assumption ensures consistency between final demand and total economic production, it introduces simplifications. It does not account for potential supply-side limitations or behavioural changes in consumers and producers over time. Consequently, economic multipliers and other impact estimates from I-O analysis should always be interpreted with these considerations in mind.

Advantages and Limitations of I-O Analysis

Like any form of economic analysis, the I-O framework has strengths and limitations. While it provides valuable insights into sectoral interdependencies and economic impacts, its results should be interpreted as indicative magnitudes rather than precise measurements, given the simplifying assumptions it relies upon.

Advantages of I-O Analysis

I-O analysis has several key advantages:

- **Ease of implementation and clarity of results:** The computation of I-O multipliers and the resultant economic impact estimates primarily involves relatively simple matrix algebra operations, which can be performed using widely available software such as Microsoft Excel. The results, expressed in monetary terms or other economic variables such as employment, are also easily understood by non-technical audiences.[3]

- **Reliance on a single, consistent data source:** I-O analysis predominantly relies on nationally published I-O tables, which serve as standardized and comprehensive dataset. This minimizes the risk of inconsistencies that may arise when combining multiple datasets with varying definitions, methodologies, or sectoral classifications.

[3] Pfahler (2001) *Regional Input-Output Analysis – Conceptual Issues, Airport Case Studies, and Extensions*

- **Comprehensive sectoral coverage and economic linkages:** Conventional I-O tables provide a detailed breakdown of economic transactions across all sectors. This allows for sector-specific analyses while maintaining a holistic economy-wide perspective. This makes I-O analysis particularly useful for examining inter-sectoral relationships and understanding how changes in one sector "ripple" through others.

- **Alignment with national accounting frameworks:** The I-O framework is directly linked to the national accounting principles, ensuring that its estimates are consistent with key macroeconomic indicators such as GDP, household incomes, and employment. This makes it a valuable tool for evaluating sectoral or regional economic contributions in the broader national economy.

Assumptions and Limitations of I-O Analysis

I-O analysis is based on several simplifying assumptions that may limit its accuracy in specific contexts. These assumptions include:[4]

- **Fixed input structure:** Each industry in the economy is assumed to use the same proportion of inputs, regardless of changes in production levels.

- **Homogeneous output:** All firms within a sector are assumed to produce identical goods and services using a uniform input mix.

- **Constant returns to scale:** The amount/number of inputs required per unit of output is assumed not to change, even when production levels increase or decrease.

- **No supply-side constraints:** Firms are assumed to be able to freely obtain raw materials, labour, and capital equipment at prevailing prices.

- **No external constraints:** Factors such as fiscal policy, trade restrictions, or balance of payments issues are assumed not to impact how industries and sectors respond to changes in demand.

Given these assumptions, I-O analysis provides a marginal interpretation of economic impacts, meaning it measures the additional (or marginal) increase in demand for an industry's output and its effects on the rest of the economy. However, in reality, supply-side constraints and behavioural adjustments can influence these outcomes, leading to potential over- or under-estimations. The limitations can be broadly classified into two main categories:

[4] Gretton (2013) *On input-output tables: uses and abuses. Australian Government Productivity Commission Staff Research Note*

- **The assumption of unlimited supply-side flexibility:** The I-O analysis assumes that economic sectors can always expand production to meet additional demand. However, firms may face practical constraints, such as labour and resource shortages or investment and liquidity constraints.
- **The assumption of fixed behaviour among firms and households:** The I-O analysis assumes that firms and households do not change their spending or production patterns in response to external factors such as changes in prices, income, or technology. In reality, firms may substitute inputs (e.g., switching to automation or alternative suppliers) when costs rise. Similarly, households may adjust their spending patterns as incomes change, such as by saving instead of spending additional incomes, or spending less on necessities and more on discretionary goods such as travel and recreational services.

The severity of these limitations varies depending on the nature and scale of the sector or project analyzed:

- **Sectors with minimal structural impact:** A small business, such as a restaurant, generally operates within existing economic conditions and does not significantly alter macroeconomic demand. In such cases, the fixed input assumption is less problematic, as the restaurant's growth does not meaningfully change supply-chain dynamics.
- **Large-scale projects with structural effects:** A high-speed rail network or a major airport can fundamentally alter the economy by reshaping human mobility, logistics, and trade costs. The fixed-structure assumption breaks down in these cases, and I-O models may underestimate or misrepresent the long-term economic effects.

Due to these limitations, I-O-based estimates should always be interpreted with caution. There is a debate about the misuse of I-O-based estimates, and some government authorities and researchers have highlighted cases where such analyses have been misused or misinterpreted.[5] To mitigate these risks, we have taken steps to ensure that our estimates remain reasonable and aligned with the Malaysian economic context. While I-O analysis remains useful for understanding economic linkages, it is most effective when supplemented with additional methodologies that account for the dynamic supply-side and behavioural effects.

[5] See, for example Oosterhaven and Stelder (2002) *Net Multipliers Avoid Exaggerating Impacts: With A Bi–Regional Illustration for the Dutch Transportation Sector*, Siegfried, Sanderson, and McHenry (2007) *The Economic Impact of Colleges and Universities*, Hohman (2016) *Multiplier Analyses are Prone to Abuse, and* Malaysian Aviation Commission (2017) *Position Paper on Economic Multipliers for the Aviation Sector*

Use of I-O Analysis to Assess Industry- and Firm-level Impact

Despite its limitations, I-O analysis remains a useful tool for understanding how economic activities within a sector or a firm influence the broader economy. By mapping out inter-sectoral linkages, it provides a structured framework for estimating the ripple effects of changes in demand. This can be used for several purposes:

- Measuring and documenting the economic footprint of an industry or firm in terms of GDP, employment, or incomes supported.
- Assessing the impact of policy changes or events, such as estimating the jobs that can be created from a new investment or incomes lost from a natural disaster.
- Evaluating sectoral linkages and dependencies of a sector, including the spillovers in economic activity between different industries or firms.

Table 1 highlights a selection of studies that apply I-O analyses to estimate the economic impact of either entire industries or specific firms and projects. While the contexts and presentation formats vary across studies, they all adopt a common methodological foundation based on I-O modelling to assess sectoral or firm-level economic contributions.

Table 1: Selected Studies Using I-O Analysis to Measure Economic Impact

Industry	Industry-level Study	Firm- or project-level Study
Food and Beverage	**The Conference Board (2017)** *Economic Contribution of the Food and Beverage Industry* **US Department of Agriculture (2025)** *Agricultural and Food Sectors and the Economy*	**London Economics (2011)** *McDonald's Economic Footprint in Europe* **Strategy& (2024)** *Nestlé Economic Value Report - Türkiye*
Land Transport	**Ji, Zou, and Tian (2019)** *Energy and Economic Impacts of China's 2016 Economic Investment Plan for Transport Infrastructure Construction: An Input-Output Path Analysis*	**Hatch (2024)** *Transport for London Supply Chain: Economic Impact Assessment 2023/24* **Kurniawati (2023)** *Impact Analysis of Construction Project of MRT on Economic Growth in Jakarta*
Professional or Other Services	**Canton, Ciriaci, and Solera (2014)** The *Economic Impact of Professional Services Liberalization*	**Oxford Economics (2013)** *The Impact of the University of Birmingham*
Air Transport	**Malaysia Aviation Commission (2017)** Aviation Sector Multiplier **Sarmidi et al. (2021)** *The COVID-19 Pandemic, Air Transport Perturbation, and Sector Impacts in ASEAN Plus Five*	**PwC (2023)** *Economic impact of IAG in the UK* **Centre for Economics and Business Research (2021)** *Supporting a Global Britain – The Economic Impact of Heathrow Airport*

Note: All referenced studies employ either standardised or customised Input–Output models. The sources include government-commissioned reports, commercially sponsored analyses, and independently published academic or policy research.

Economic Multipliers and Impact

The circular flow of income describes how spending in one part of the economy stimulates further economic activity across multiple sectors. This concept underpins economic multipliers, which measure how an initial injection of spending leads to broader economic effects.

For example, when consumers spend money—including on services provided by Grab—this expenditure directly benefits businesses that provide goods and services. These businesses, in turn, purchase additional inputs and hire more workers to meet rising demand. The newly generated income for workers (in the form of wages) and business owners (as profits) is then reinvested into the economy, generating further rounds of economic activity.

Channels of Economic Impact

To quantify these effects, economic impacts are typically categorized into three key channels:

- **Direct effects:** The immediate economic impact from the primary sector or the core activity itself. In Grab's case, this includes consumer spending on ride-hailing and delivery services, which directly supports Grab's operations, driver-partners, and merchant-partners. Direct effects are measured by the initial consumer expenditure allocated toward the specific service or sector.
- **Indirect effects:** The impact on upstream suppliers that provide inputs to the focal sector. For instance, Grab driver-partners purchase fuel from petrol stations, vehicles from car dealerships, and insurance from financial service providers. Similarly, GrabFood merchants rely on farmers, food processors, and packaging suppliers to fulfil orders.
- **Induced effects:** The additional economic activity generated when employees and business owners spend their income on goods and services, such as housing, groceries, and leisure. These expenditures further stimulate demand across various sectors, perpetuating the cycle of economic activity.

In addition to these standard multiplier effects, certain broader socio-economic benefits and costs—known as catalytic effects—may also arise. These effects are more challenging to quantify using traditional I-O analysis, but they provide important qualitative insights into the broader impact of a sector or industry. Examples of catalytic effects include:

- **Facilitation of broader economic activities:** Enhanced mobility and logistics reduce travel times, improve business efficiency, and increase tourism potential.

- **Non-monetary consumer benefits:** Ride-hailing and delivery services offer convenience, time savings, and accessibility, improving overall quality of life.
- **Environmental and health considerations:** While increased transport services may lead to higher carbon emissions, digitalization and platform efficiency improvements can also reduce inefficiencies and optimize resource use.

By capturing these different layers of economic impact, the circular flow of income framework provides a holistic understanding of how sectors like Grab's mobility and delivery services contribute to economic activity beyond their immediate operations.

Types of Economic Multipliers

Economic multipliers quantify how an initial change in spending propagates through the economy, generating additional rounds of economic activity. They measure the total impact of output, value added, income, and employment relative to the initial direct spending or revenue.

Multipliers are classified into two main types based on the scope of effects considered:

- **Type I multipliers** measure the total impact of direct and indirect effects relative to the direct effects alone.

$$\text{Type I multiplier} = \frac{\text{Direct effects} + \text{Indirect effects}}{\text{Direct effects}}$$

- **Type II multipliers** expand on Type I by incorporating induced effects, capturing the impact of increased household income and spending. Since Type II multipliers account for all three channels of impact (direct, indirect, and induced effects), they are always larger than their Type I counterparts.

$$\text{Type II multiplier} = \frac{\text{Direct effects} + \text{Indirect effects} + \text{Induced effects}}{\text{Direct effects}}$$

Economic multipliers can thus be defined as the ratio between the total effects—direct, indirect, and induced effects (depending on the multiplier type)—to the initial direct spending or revenue. In simple terms, multipliers translate initial spending into a broader impact on the wider economy, including outcomes such as output, employment, and value added across various sectors.

Output Multiplier

An **output multiplier** measures how changes in direct spending impact total economic output across all sectors.

$$\frac{\text{Direct Output (\$)} + \text{Indirect Output (\$)} + \text{Induced Output (\$)}}{\text{Direct Spending (\$)}}$$

For example, an estimated Type II output multiplier of 2.88x indicates that each RM1 initially spent by a consumer generates a total of RM2.88 in economic output throughout different sectors.

Value Added Multiplier

A **value added multiplier** measures how changes in direct spending translate into changes in value added, effectively measuring contributions to GDP. Specifically, it represents the total value added (GDP contribution) generated—through direct, indirect, and induced effects—for every unit of initial spending.

$$\frac{\text{Direct Value – add (\$)} + \text{Indirect Value – add (\$)} + \text{Induced Value – add (\$)}}{\text{Direct Spending (\$)}}$$

For example, a Type II value added multiplier of 1.08x means that every RM1 spent by consumers generates RM1.08 in value added after netting off intermediate inputs from generated output.

Income Multiplier

An **income multiplier** measures how changes in direct consumer spending translate into changes in household incomes, primarily through increased earning opportunities for workers (or partners, in Grab's context).

$$\frac{\text{Direct Incomes (\$)} + \text{Indirect Incomes (\$)} + \text{Induced Incomes (\$)}}{\text{Direct Spending (\$)}}$$

For example, a Type II income multiplier of 0.40x indicates that every RM1 consumers spend generates RM0.40 in household income via wages, earnings, or partner payments throughout the economy.

Employment Multiplier

An **employment multiplier** measures how changes in direct consumer spending influence job creation in the economy. Specifically, it measures how many jobs are created in the overall economy from the initial amount of consumer spending.

$$\frac{\text{Direct Employment (persons)} + \text{Indirect Employment (persons)} + \text{Induced Employment (persons)}}{\text{Direct Spending (\$)}}$$

For example, a Type II employment multiplier of 0.000013x means that every RM1,000 spent by consumers supports the equivalent of 0.013 jobs. Alternatively, every RM76,923 spent by consumers supports the equivalent of 1 job.

Estimating Grab's Economic Impact

This study uses a two-part procedure to estimate the economic impact of Grab's mobility and delivery services.

1. Calculate the output multiplier for Grab services and apply the multiplier to the amount of direct consumer spending on Grab services to estimate the total impact on output.
2. Multiply the output impact estimate by the relevant coefficients to estimate the **value added, household income, and employment impacts.**

Calculating Output Multipliers from the I-O Tables

Our methodology for calculating economic multipliers begins with the Absorption Matrix of Domestic Production, which captures the combination of inputs each sector uses to produce its output. The I-O framework comprises several tables, notably the Commodity × Activity (CxA), Commodity × Commodity (CxC), and Activity × Activity (AxA) tables, sometimes referred to as Industry × Industry tables in other jurisdictions. The CxA table—often referred to as the Supply and Use Table (SUT)—details the production of commodities by industries and the use of those commodities across the economy. From this foundation, symmetrical CxC and AxA tables are derived.

For this study, we use the AxA table due to its emphasis on inter-industry linkages rather than inter-product relationships. This approach better reflects the reality that an industry's output typically spans a range of commodity categories, rather than aligning neatly with a single product classification. As such, the AxA framework is more appropriate for capturing how changes in one industry transmit through others, particularly in terms of impacts on GDP, employment, and household income.

We focus on three specific activities—food and beverage (Activity 95), land transport (Activity 96), and professional services (Activity 115)—because they are most directly aligned with Grab's core business segments, including GrabFood, GrabExpress, and various platform-enabled services. These sectors are expected to both supply inputs to and receive outputs from Grab's operations, making them central to understanding its economic footprint.

A truncated version of the I-O tables, showing these selected activities, is presented below (see Table 2). To illustrate, in 2023, the food and beverage sector (Activity 95) generated RM79.5 billion in output. In doing so, it utilised RM4.8 billion of inputs from within the same sector, RM312.3 million from the land transport sector (Activity 96), and RM411.7 million from the professional sector (Activity 115), among others.

For brevity, sectors are referenced according to their activity codes as defined in the I-O tables. These codes are explained in the accompanying notes to the respective tables.

Table 2: Truncated Version of Original Absorption Matrix (in RM'000)

Activity	95	96	115	… (Other sectors)	Total use
95	4,818,977	18,481	511,849	…	79,522,409
96	312,302	125,837	69,521	…	28,201,766
115	411,745	197,495	1,708,030	…	44,494,222
… (Other sectors)	…	…	…	…	…
Total output	79,522,409	28,201,766	44,494,222	…	**4,627,792,169**

Source: DOSM and EconWorks' analysis
Activity Codes: 95 = Food and Beverage, 96 = Land Transport, 115 = Professional

We extend the I-O tables by introducing a dedicated Grab "sector" alongside the 124 existing sectors. This involves adding a new column and row to represent Grab's input requirements and output contributions within the economy.

The Grab column in Table 3 represents the inputs Grab requires to deliver its services. These inputs are allocated based on a weighted average of Grab's activities, using revenue shares as weights. Specifically, the weight assigned to each sector reflects Grab's output in that segment as a proportion of the total output of the corresponding industry. To maintain consistency in the economy-wide I-O model, these input allocations are deducted from their respective source industries, thereby ensuring that total output remains unchanged after the inclusion of Grab as a distinct sector.

Table 3: Truncated Version of Extended Absorption Matrix (in RM'000)

Activity	95	96	…	Grab sector	Private consumption	Total use
95	4,585,270	15,699	…	248,760	59,121,172	75,665,786
96	297,156	106,893	…	35,756	2,358,602	23,956,236
115	391,776	167,764	…	90,645	131,711	44,494,222
….	…	…	…	…	…	
Grab sector	…	…	…	…	9,168,791	9,168,791
Total output	**175,926,073**	**222,332,096**	**…**	**9,168,791**	**897,572,506**	**4,627,792,169**

Source: DOSM and EconWorks' analysis
Activity Codes: 95 = Food and Beverage, 96 = Land Transport, 115 = Professional

Meanwhile, the Grab row represents how other sectors use Grab's output. We assume that all of Grab's output is consumed through private consumption expenditure. This assumption is supported by internal data, which indicates that Grab's revenue is primarily generated from end-consumer spending, rather than through intermediate demand by other businesses.

Using the extended Absorption Matrix, we construct the **Direct Requirements Matrix,** which expresses the respective sectors' inputs and value added in percentage terms – see Table 4. This is a 125 x 125 matrix, with each of the 124 economic sectors and the newly added Grab sector represented by a row and column. A truncated version is produced below and can be interpreted as follows: RM1 of output in the food and beverage sector requires RM0.061 of inputs from itself, RM0.004 of inputs from the land transport sector, and so on.

Table 4: Truncated Version of Direct Requirements Matrix

Activity	95	96	…	Grab sector	Total use
95	0.061	0.001	…	0.027	0.016
96	0.004	0.004	…	0.004	0.005
115	0.000	0.000	…	0.000	0.003
…	…	…	…	…	…
Grab sector	-	-	-	-	0.002
Total	**1.000**	**1.000**	**…**	**1.000**	**1.000**

Source: DOSM and EconWorks' analysis
Activity Codes: 95 = Food and Beverage, 96 = Land Transport, 115 = Professional

From the Direct Requirements Matrix, we derive the Leontief Inverse Matrix, which represents the interdependence between economic sectors. The formula for the Leontief Inverse matrix is defined as $(I-A)^{-1}$, where:

- I is an n x n identity matrix where each element takes the value of 1 if its row and column numbers are equal and zero otherwise.
- A is the direct requirements matrix, as elaborated above.
- The (I-A) matrix is inverted to obtain the Leontief Inverse matrix.

A truncated version of the Leontief Inverse Matrix is produced below (see Table 5). The sum of each column represents the **output multiplier** for the sector represented by the column. Thus, an RM1 increase in direct output for the food and beverage sector increases own-sector output by RM1.068, land transport output by RM0.008, and so on, with the total direct and indirect effects on output amounting to RM1.917. Our estimate of the Type I output multiplier for Grab is RM1.871 per RM1 of direct consumer spending.

Table 5: Truncated Version of Leontief Inverse Matrix

RM	95	96	115	…	Grab sector
95	1.068	0.002	0.015	…	0.031
96	0.008	1.007	0.004	…	0.008
115	0.013	0.0128	1.053	…	0.018
…	…	…	…	…	…
Grab sector	0.000	0.000	0.000	…	-
Total (Type I output multiplier)	**1.917**	**1.809**	**1.569**	**…**	**1.871**

Source: DOSM and EconWorks' analysis
Activity Codes: 95 = Food and Beverage, 96 = Land Transport, 115 = Professional

The steps above are applied to calculate the Type I output multiplier, which measures both direct and indirect effects of economic activity. To derive the Type II output multiplier, which also incorporates induced effects arising from household income and spending, we use an augmented version of the Direct Requirements Matrix. This version integrates the household sector through the inclusion of an additional row and column. The additional row corresponds to the COE row in the I-O tables, while the additional column is taken from the "private consumption expenditures" column. This results in a 126 x 126 Direct Requirements Matrix, which is then inverted to produce the augmented Leontief Inverse Matrix used for estimating Type II output multipliers. Similar steps are repeated to derive the multipliers.

A simplified version of the augmented Leontief Inverse Matrix is shown below (see Table 6). The Type II output multiplier for Grab is RM2.87 for each RM1 of consumer spending on Grab. The interpretation follows the same logic as the original Leontief matrix, i.e., an RM1 increase in direct spending in the food and beverage sector increases own-sector output by RM1.068, land transport output by RM0.008, and so on, with the total direct and indirect effects on output of RM2.893 across all sectors.

Table 6: Truncated Version of Augmented Leontief Inverse Matrix

RM	95	96	115	…	Grab sector
95	1.097	0.029	0.057	…	0.061
96	0.011	1.010	0.008	…	0.011
115	0.020	0.019	1.063	…	0.007
…	…	…	…	…	…
Grab sector	0.004	0.004	0.006	…	1.004
Household sector	0.392	0.357	0.564	…	0.402
Total (Type II output multiplier)	**2.893**	**2.699**	**2.973**	**…**	**2.872**

Source: DOSM and EconWorks' analysis
Activity Codes: 95 = Food and Beverage, 96 = Land Transport, 115 = Professional

Once the Type I and Type II output multipliers for Grab have been calculated, we apply them to Grab's direct consumer spending to estimate the total economic impact in terms of output. The breakdown of effects is as follows:

Direct effects= **RM 9.169 billion**

Type I output effects= RM 9.169 billion x 1.871=RM 17.154 billion

Type II output effects= RM 9.169 billion x 2.872=RM 26.452 billion

Indirect effects= Type I output effects-direct effects=**RM 7.986 billion**

Induced effects=Type II output effects-Type I output effects
= **RM 9.297 billion**

Thus, the total output impact from RM9.169 billion of final demand on Grab services is RM26.452 billion, comprising the direct, indirect, and induced effects.

In addition to the aggregate impact, the sectoral distribution of these output effects can be identified using the entries from the Grab column of the augmented Leontief Inverse Matrix (see Table 7). This allows us to estimate the share of total output attributed to individual sectors. Indeed, this sectoral breakdown helps illustrate how Grab's activities propagate through different parts of the economy, generating value beyond its immediate operations.

Table 7: Output Effects by Economic Sector from Direct Spending on Grab

Sector	Output impact, RM million
…	
Food and Beverage	563.2
Land Transport	100.0
Professional	228.1
…	…
Grab	9,206.4
Household earnings	3,685.0
Total output impact	**26,452.0**

Source: DOSM and EconWorks' analysis

Calculating the Value Added, Earnings, and Employment Impacts

Value Added and Earnings Coefficients from Malaysia's I-O Tables

Once the total output impact has been established, we extend the analysis to estimate Grab's contribution to other key economic indicators, namely, gross value added (GVA), household earnings, and employment. It is important to note that the output multipliers calculated earlier (and published in the I-O tables by the Department of Statistics Malaysia, DOSM) do not directly correspond to GDP or other measures of economic contribution. This is because output represents the total value of production, including both the value of intermediate inputs consumed and the value added by the sector. As such, it does not reflect net contributions to the economy.

To estimate these net contributions, we return to the Direct Requirements Matrix. Each RM1 of output in a sector can be decomposed into two components: the value of intermediate inputs and the sector's sources of GVA, which include compensation of employees, operating surplus, and taxes less subsidies on production.

In the illustrative example below (see Table 8), RM1 of final output in the food and beverage sector comprises RM0.476 in intermediate inputs and RM0.412 in value added, with the remaining components attributed to other inputs. For the column representing Grab, the GVA coefficients are computed using a weighted average of the component sectors, based on the proportionate contributions of Grab's business verticals to its total revenue. This enables a composite estimate of value added that reflects the structure of Grab's operations within the wider economy.

Table 8: Truncated Version of Direct Requirements Matrix, Focusing on Value Added Components

	Food and Beverage	…	Grab
Total intermediate inputs	0.476	…	0.475
+Imported commodities	0.108	…	0.089
+Net taxes on products	0.009	…	(0.001)
+Gross value added, of which	0,412	…	**0.437**
Compensation of employees	0.216	…	**0.230**
Other net taxes on production	(0.001)	…	(0.001)
Gross operating surplus	0.197	…	0.208
Total Output	1.000	…	1.000

Source: DOSM and EconWorks' analysis

We are primarily interested in two statistics. Firstly, the coefficient on GVA represents the share of value added generated for each RM1 of output a sector

generates. So, each RM1 in sales of Grab services generates RM0.437 in GVA. Secondly, the coefficient on the COE reflects the proportion of household incomes generated for each RM1 of output a sector generates. So, each RM1 in sales of Grab services generates RM0.230 in employee compensation across the value chain. Indeed, these coefficients allow us to estimate Grab's broader economic contributions beyond output, specifically in terms of GDP (via GVA) and household welfare (via COE).

Calculating the Value Added Impact

To estimate the total impact on GVA, interpreted as Grab's contribution to national GDP, we multiply the output impacts across each sector by their corresponding value added coefficients.

In matrix notation, this is an element-wise multiplication as follows:

$$VA=[y]*[va]$$

where [*y*] is a *n* x 1 matrix of Grab's output impact across *n* sectors, and [*va*] is an *n* x 1 matrix of the technical coefficients on GVA for all *n* sectors. The sum of all elements in *VA* is thus the total value added impact that arises from direct spending on Grab. The calculation is illustrated in Table 9 below:

Table 9: Calculation of Grab's Value Added Impact

Sector	Output effect, RM million (1)	Value added coefficient (2)	Value added impact. RM million (1) × (2)
Food and Beverage	563.2	0.4123	232.2
Land Transport	100.0	0.4061	40.6
Professional Services	228.1	0.6386	145.7
…	…	…	…
Grab	9,206.4	0.4369	4,022.7
Total			**9,901.3**

Source: DOSM and EconWorks' analysis

Calculating the Household Income Impact

A similar procedure is used to calculate the impact on household earnings due to the direct consumer spending on Grab services. We multiply the output impact across all sectors by their respective COE coefficient.

In matrix notation, this is an element-wise multiplication as follows:

$$Earnings=[y]*[coe]$$

where [*y*] is a *n* x 1 matrix of the output impact across *n* sectors, and [*coe*] is an *n* x 1 matrix of the technical coefficients on the COE for all n sectors. The sum of all elements in COE is thus the total household incomes impact that arises from direct spending on Grab. The calculation is illustrated in Table 10 below:

Table 10: Calculation of Grab's Household Income Impact

Sector	Output effect, RM million (1)	Earnings coefficient (2)	Earnings impact. RM million (1) × (2)
Food and Beverage	563.2	0.2163	121.8
Land Transport	100.0	0.2100	21.0
Professional Services	228.1	0.3538	80.70
…	…	…	…
Grab	9,206.4	0.2301	2,118.7
Total			**3,684.0**

Source: DOSM and EconWorks' analysis

Calculating the Employment Impact

Unlike some jurisdictions that may directly publish employment-based multipliers,[6] Malaysia's I-O tables are expressed solely in Ringgit terms and do not contain data on the number of employed persons by economic sector. As such, estimating the employment impact of Grab's activities requires a supplementary procedure to translate earnings effects into job estimates.

This process presents several challenges. Firstly, labour market data is computed from sources outside the I-O tables. In the Malaysian context, employment data comes from different sources, including the Labour Force Survey, the Economic Census, Monthly Manufacturing Statistics, and Quarterly Services Statistics. These sources have different coverages in terms of sectors or types of establishments. For instance, the Labour Force Survey includes those employed in the informal sector. In contrast, the others only include formal, establishment-based employment.[7]

These distinctions are especially important given the nature of Grab's platform-based business model. Grab does not maintain a conventional employer-employee relationship with its merchant- or driver-partners; therefore, such partners are not reflected in datasets that rely on formal employment definitions. Moreover, Grab partners have autonomy over their working hours and may simultaneously engage with multiple platforms (a behaviour known as multi-homing or multi-apping). This makes it conceptually difficult to quantify employment effects using traditional definitions of full-time or formal

[6] For example, the Scottish Government publishes official estimates of the employment multiplier for each economic sector. the Scottish Government (2023) *Multipliers – Supply, Use, and Input-Output Tables*
[7] See Nurliza and Akmalia (2019) *Computing Employment Multipliers in the Context of Malaysian Economy*

employment. In addition, the employment effects extend beyond Grab's direct partners to include individuals employed by the suppliers to Grab's merchant-partners, further complicating attribution.

Given these limitations, this study expresses Grab's employment impact in terms of the number of jobs supported, rather than jobs directly created. This is calculated by dividing the total earnings attributable to Grab's activity by a selected salary benchmark that reflects average earnings per worker in the relevant sector or economy:

$$\text{Employment} = \frac{\text{Incomes}}{\text{Salary Benchmark}}$$

The data on wages and salaries differs from the I-O tables in that they are only provided based on five major sector groupings, rather than the 124 granular sectors in the I-O tables. Thus, we categorize the earnings across the 124 I-O sectors into the five sectoral groupings according to DOSM's categorization: agriculture, mining and quarrying, manufacturing, construction, and services (see Table 11). The sum of earnings in each sector is then divided by the median wage for each sector in 2023, published in the *Formal Sector Employee Wage Statistics* report by DOSM.

Table 11: Median Earnings by Sectors

Sector	Monthly Median Wage (RM)	Annual Median Wage (RM)
Agriculture	1,980	23,764
Mining and quarrying	5,562	66,744
Manufacturing	2,529	30,353
Construction	2,748	32,978
Services	2,648	31,781

Source: DOSM and EconWorks' analysis

There are inherent limitations to this approach. Firstly, the method assumes that the generated employment opportunities are equivalent in remuneration, abstracting from the inherent differences in the nature of work, including salaries, across different sectors of the economy. This calculation also implies that the additional household incomes are generated by new job creation rather than increasing incomes for existing workers. To illustrate, this approach assumes that a merchant-partner would hire extra staff to cater to the increased demand from the GrabFood platform rather than pay existing staff more for overtime work. Even if both methods increase household incomes by the same amount, only the former is considered an increase in employment.

Finally, and in line with the assumption of constant returns to scale, the employment estimates assume that businesses use the same proportion of labour inputs to produce the additional output generated from an initial increase in direct consumer spending. In reality, businesses may use different methods to increase their production, including expanding their capacity via capital equipment instead of increasing their headcount.

Adjusting Earning Opportunities for Non-full-time employment

The estimates from the I-O analysis above are estimates of full-time-equivalents positions. This may not fully reflect the number of individuals who may benefit from Grab-related activities in terms of opportunities to earn a living For example, many driver-partners do not engage with the platform on a full-time basis, instead offering their services during spare time or outside of primary employment to supplement their income. In light of this, the report uses the term "earning opportunities" that combines both the full-time-equivalent and non-full-time-equivalent figures. Earning opportunities can thus be interpreted as the total number of individuals that earn an income, regardless of their hours worked, from Grab-related activities. This provides a more inclusive measure of Grab's economic footprint within the labour market. Table 12 displays the statistics used to compile the total earning opportunities. These include direct, indirect, and induced effects across three main segments: Grab's internal operations, its driver-partners, and merchant-partners. The sum of these categories yields an estimated 277,237 earning opportunities supported by Grab's ecosystem.

Table 12: Statistics Used to Compile Total Earning Opportunities

Segment	Direct effects (persons)	Indirect effects (persons)	Induced effects (persons)
Grab operations	Grab's full-time and part-time employees	I-O estimate	I-O estimate
Driver-partners	Number of active driver-partners	I-O estimate	I-O estimate
Merchant-partners	I-O estimate	I-O estimate	I-O estimate

Source: DOSM and EconWorks' analysis

Expressing Economic Impact in Ratio Terms

Formally, economic multipliers are defined with an output-based denominator against a numerator, which can be any economic indicator of interest. These mean that the impacts (value added, incomes, employment) may be expressed differently than the direct effect (output).

For simplicity of interpretation, including in the public report, we have expressed some results in ratio terms, where both the direct and total impacts are expressed

in the same terms (value added, incomes). For value added, the ratio of 2.5x means that every RM1.00 of direct value added leads to a total of RM2.50 in value added contribution to GDP when indirect and induced effects are included. Hence, every RM1.00 in direct value added leads to a further increase in value added of RM1.50 via indirect and induced effects, as expressed in the main report (for example, on page 7) and the infographics.

Table 13 shows the ratio calculations for value added and household income effects.

Table 13: Value Added and Household Incomes Effects

	Value added (RM)	Household incomes (RM)
Direct effect	4,006 million	2,077 million
Indirect effect	3,404 million	857 million
Induced effect	2,490 million	717 million
Total effects	9,901 million	3,652 million
Type II ratio (Total/Direct)	2.5x	1.8x

Source: DOSM and EconWorks' analysis

Robustness Checks and Alternative Approaches

While economic multipliers from I-O analysis are widely used tools used by both governments and industry, we recognise the risk of misestimation or misinterpretation of the results. In particular, we are mindful of the potential for overstatement of Grab's economic contribution to the Malaysian economy. Overestimation may arise from issues such as double-counting, or from conflating different dimensions of impact, for example, by interpreting output and GVA as entirely separate rather than partially overlapping metrics.

To mitigate these risks, we have implemented several robustness checks and alternative estimation approaches to ensure that our calculated multipliers are both conservative and aligned with official standards. These include:

- Benchmarking our estimated multipliers against official multipliers published by DOSM.
- Cross-validating results by applying alternative methodologies, beyond the primary approach outlined in the preceding sections.

Given that most officially published multipliers focus on output, our checks are primarily centred on comparisons of the output multiplier. However, they also hold for the other economic variables of interest, given that the latter is derived from the former. Overall, our robustness checks indicate that **the estimated Grab's economic contribution aligns with the overall structure of Malaysia's economy and falls within the range of multipliers published by official sources.** While we emphasize that no estimate of economic impact can be made with absolute precision, these validations provide reasonable assurance that our results reflect a credible estimate of the likely magnitude of Grab's contribution.

Comparisons with officially published multiplier estimates

The Malaysian I-O tables include a pre-calculated Leontief Inverse Matrix, which presents the Type I multipliers for all 124 economic sectors. These have been considered as the "official" estimates that are acceptable by the public sector.[8] As such, they provide a useful benchmark against which to assess the reasonableness of Grab's estimated output multiplier. We compare Grab's output multiplier with those from a selection of sectors, particularly those closely related to its operations. If Grab's multiplier falls within the observed range and is not an outlier, this would suggest that the estimate is broadly consistent with the structure of Malaysia's economy.

[8] MAVCOM (2017) cites an example where an economic multiplier of 14.0x was presented for the aviation sector, which is an extreme outlier when compared with official estimates

Table 14 below presents a partial list of the official Type I output multipliers from Malaysia's I-O tables, along with summary statistics. Grab's output multiplier of 1.871 is firmly within the range of values of the multipliers for other sectors, placing it close to the median output multiplier. We have also computed and presented the Type II output multipliers for the economic sectors, but these are for contextual purposes only and are not directly published by DOSM.

Table 14: Selected Output Multipliers and Summary Statistics

	Type I output multiplier	Type II output multiplier
Land transport	1.9169	2.853
Food and beverage	1.9175	2.893
Median	1.8350	2.5900
25th percentile	1.7761	2.2896
75th percentile	1.6238	2.8396
Minimum	1.9684	1.3232
Maximum	1.1679	3.4817
Grab estimate	**1.8715**	**2.8720**

Source: DOSM and EconWorks' analysis (Type II Multipliers). The food and beverage and land transport sectors were chosen to represent the sectors most relevant to Grab's activities

We also compare the coefficients on value added and COE we constructed for Grab with the official DOSM coefficients for other sectors. These comparisons similarly indicate that Grab's estimates fall within expected ranges and are consistent with official data (see Table 15).

Table 15: Selected Value Added and Earnings Coefficients and Summary Statistics

	Value added coefficient	Earnings coefficient
Land transport	0.4141	0.2149
Food and beverage	0.4123	0.2163
Median	0.3128	0.1277
25th percentile	0.2439	0.0776
75th percentile	0.5483	0.2001
Minimum	0.0819	0.0095
Maximum	0.8304	0.6436
Grab estimate	**0.4369**	**0.2301**

Source: DOSM and EconWorks' analysis

Alternative approaches to compute an output multiplier for Grab

Another approach to ensure that our multiplier estimates are reasonable is to use alternative, simplified methods to construct a Grab multiplier. Instead of incorporating a sector representing Grab into the I-O tables, these alternative methods treat Grab as directly producing output in the existing economic sectors. If the estimated multipliers are similar across these different approaches, this provides confidence that the estimated multipliers are not overly sensitive to methodological choices.

Alternative Method 1: Activity-Based Attribution

The first alternative categorizes Grab spending by the different mobility or delivery services. It assigns them to the most appropriate existing sectors according to the Malaysia Standard Industrial Classification (MSIC). For example, we treat revenues derived from GrabCar as output in the land transport sector, while revenues from GrabFood and GrabMart as output in the food and beverage sector.

Using the data provided by Grab and certain assumptions, we assign the total revenue to the four services covered in this report. The four revenue categories are then multiplied by their respective sectoral output multipliers, and the total output effect is the sum across the four categories (see Table 16).

Table 16: The Grab Multiplier as a Weighted Average of Sector Multipliers – First Method

	Final demand (MYR)	Economic sector	Sector multiplier	Output effects
GrabCar	A	Land Transport	2.85	2.85 * A
GrabFood	B	Food and Beverage	2.89	2.89 * B
GrabExpress	C	Postal and Courier Service	3.27	3.27 * C
GrabMart	D	Food and Beverage	2.89	2.89 * D
Total	**9,168,791**			**26,451,962**

Source: Grab and DOSM. Figures for A, B, C, and D are withheld for confidentiality

Alternative Method 2: Revenue Recipient Attribution

The second alternative categorizes revenue based on their final recipient: Grab (corporate), driver-partners, and merchant-partners. Each recipient is then mapped to a corresponding economic sector:

- Grab is considered as offering head office activities, namely overseeing and managing the overall company. This is included in the professional, scientific, and technical activities sectors.

- Driver-partners are considered as mainly offering a "taxi operation and limousine service". This comes under land transport sector.
- Merchant-partners, due to a large majority of them comprising GrabFood merchants, are considered to be in the food and beverage sector.

Similar to the method earlier, we multiply the three revenue categories by their respective sectoral output multipliers and sum across the three to obtain the total output effect (see Table 17).

Table 17: The Grab Multiplier as a Weighted Average of Sector Multipliers – Second Method

Revenue recipient	Final demand (RM)	Economic sector	Sector multiplier	Output effects
Grab	A	Professional, scientific, and technical activity	2.86	2.85 × A
Driver-Partners	B	Land transport	2.85	2.89 × B
Merchant-Partners	C	Food and beverage	2.89	3.27 × C
Total	**9,168,791**			**26,763,701**

Source: Grab and DOSM. Figures for A, B, and C are omitted due to confidentiality

We find that the results of the output effect and multiplier across the three methods are similar, and thus the magnitude of the output effect (and correspondingly, the effect on other economic outcomes such as value added and earnings) is not sensitive to assumptions on the sectoral composition of Grab's activities (see Table 18). This is partly because, for a large majority of Grab's revenues, the relevant sectoral output multiplier is similar, particularly the output multipliers for the land transport and food and beverage sectors.

Table 18: Comparison of Output Multiplier Estimates Across Approaches

	Main methodology	Weighted average approach – First method	Weighted average approach – Second method
Output multiplier (T1)	**1.871**	1.919	1.872
Output multiplier (T2)	**2.872**	2.885	2.919
Value added multiplier (T2)	**1.080**	1.055	1.073
Earnings multiplier (T2)	**0.402**	0.385	0.403

Source: EconWorks' analysis

Conclusion

This methodological note has outlined the methodological framework used to estimate the economic contribution of Grab's mobility and delivery services in Malaysia. Drawing on Malaysia's I-O tables and Grab's internal data, we have constructed tailored multipliers to estimate output, value added, household income, and employment effects, anchored in established economic modelling principles.

While the I-O methodology offers a clear and consistent framework for tracing inter-industry linkages, we have complemented it with sector-specific assumptions, data disaggregation, and robustness checks to ensure that our estimates are conservative and credible. Comparisons with official multipliers and alternative estimation approaches confirm that our results are consistent with Malaysia's economic structure and in line with accepted analytical practices.

Given the evolving nature of platform-based business models, we have taken care to capture both full-time and flexible economic participation by expressing employment impacts in terms of earning opportunities. This reflects the broader footprint of Grab's ecosystem beyond conventional employment metrics.

Although no model can fully capture the complexities of a dynamic economy, the results presented here provide a robust estimate of the scale and channels through which Grab's services contribute to economic activity in Malaysia. These estimates form a sound empirical basis to inform policy discussions and strategic planning around the platform economy and its role in Malaysia's broader development agenda.

Appendix I: Type I and Type II Output Multipliers for 124 Sectors in Malaysia

Table A1-1: Type I and Type II Output Multipliers for 124 Sectors in Malaysia's I-O Tables, 2021

No.	Sector	Type I Output Multiplier	Type II Output Multiplier
1	Paddy	1.168	1.323
2	Food Crops	1.253	1.506
3	Vegetables	1.227	1.512
4	Fruits	1.356	1.581
5	Rubber	1.305	1.613
6	Oil Palm	1.170	1.681
7	Flower Plants	1.332	1.721
8	Other Agriculture	1.384	1.884
9	Poultry Farming	1.670	2.061
10	Other Livestock	1.944	2.310
11	Forestry and Logging	1.349	1.652
12	Fishing and Aquaculture	1.285	1.533
13	Crude Oil and Natural Gas	1.189	1.452
14	Mining of Metal Ores	1.946	2.826
15	Quarrying of Stone, Sand and Clay	1.826	2.589
16	Other Mining and Quarrying	1.926	2.966
17	Processing and Preserving of Meat	2.370	2.955
18	Processing and Preserving of Seafood	2.076	2.633
19	Processing and Preserving of Fruits & Vegetables	1.622	2.264
20	Dairy Products	2.094	2.617
21	Vegetable & Animal Oils and Fats	2.269	2.813
22	Grain Mill Products, Starches and Starch Products	1.833	2.245
23	Bakery Products	2.027	2.631
24	Confectionery	2.023	2.456
25	Other Food Processing	1.880	2.460
26	Prepared Animal Feeds	2.120	2.540
27	Spirits, Wines and Liquors	1.500	1.844
28	Soft Drinks, Mineral Waters and Other Bottled Waters	1.981	2.709
29	Tobacco Products	1.319	1.565
30	Preparation, Spinning and Weaving of Textiles	1.625	2.086
31	Finishing of Textiles	1.848	2.545
32	Other Textiles	1.843	2.482
33	Wearing Apparel	1.875	2.824
34	Leather Products	1.807	2.434

No.	Sector	Type I Output Multiplier	Type II Output Multiplier
35	Footwear	1.729	2.530
36	Sawmilling and Planning of Wood	2.105	2.938
37	Veneer Sheets and Wood-based Panels	2.143	3.237
38	Builders' Carpentry and Joinery	2.190	3.376
39	Wooden Containers and Other Wood Products	2.167	3.177
40	Paper and Paper Products	1.901	2.673
41	Furniture	2.038	3.213
42	Reproduction of Recorded Media	1.843	2.621
43	Printing	1.752	2.842
44	Coke and Refined Petroleum Products	1.886	2.165
45	Basic Chemicals	2.080	2.477
46	Fertilizers and Nitrogen Compounds	1.648	2.060
47	Paints and Varnishes	1.745	2.290
48	Pharmaceuticals, Medicinal Chemical and Botanical Products	1.556	1.997
49	Soaps & Detergents, Cleaning & Polishing, Perfumes and Toilet Preparations	1.864	2.363
50	Other Chemicals Products	1.837	2.221
51	Rubber Tyres and Tubes	1.991	2.651
52	Rubber Processing	1.840	2.278
53	Rubber Gloves	1.947	2.401
54	Other Rubber Products	1.754	2.461
55	Plastic Products	1.647	2.288
56	Glass and Glass Products	1.823	2.626
57	Refractory, Clay, Porcelain and Ceramic Products	1.884	2.893
58	Cement, Lime and Plaster	2.132	2.809
59	Non-Metallic Mineral Products	2.097	2.904
60	Basic Iron and Steel	1.934	2.608
61	Basic Precious and Other Non-Ferrous Metals	1.878	2.516
62	Casting of Metals	1.775	2.612
63	Structural Metal Products, Tanks, Reservoirs and Steam Generators	1.735	2.431
64	Other Fabricated Metal Products	1.634	2.288
65	Engines & Turbines, Fluid Power Equipment, Other Pumps, Compressors, Taps and Valves	1.517	2.350
66	Other General Purpose Machinery	1.814	2.494
67	Weapons, Ammunition and Special Purpose Machinery	1.730	2.681
68	Domestic Appliances	1.981	2.915
69	Computers, Peripheral, Office Equipment and Machinery	2.032	2.703
70	Electric Motors, Generators and Transformers	1.862	2.568

No.	Sector	Type I Output Multiplier	Type II Output Multiplier
71	Electricity Distribution & Control Apparatus, Batteries and Accumulators	1.908	2.591
72	Fibre Optic Cables, Electronic and Other Electric	1.945	2.657
73	Wiring Devices, Electric Lighting Equipment and Other Electrical	1.844	2.579
74	Electronic Components and Boards	1.967	2.598
75	Communication Equipment and Consumer Electronics	1.969	2.704
76	Irradiation Equipment, Electro Medical and Electrotherapeutic	1.697	2.586
77	Measuring Equipment, Testing, Navigating and Control	1.884	2.746
78	Optical Instruments, Photographic Equipment, Magnetic and Optical Media	2.124	2.865
79	Watches and Clocks	1.624	2.769
80	Motor Vehicles, Trailers and Semi-Trailers	1.968	2.395
81	Motorcycles	1.789	2.662
82	Ships, Boats, Bicycles and Invalid Carriages	2.005	2.427
83	Other Transport Equipment	1.992	2.503
84	Other Manufacturing	1.675	2.303
85	Repair & Installation of Machinery and Equipment	1.994	2.644
86	Electricity and Gas	1.606	2.025
87	Water	1.683	2.256
88	Sewerage, Waste Management and Remediation Activities	2.113	3.122
89	Residential Buildings	1.998	3.215
90	Non-Residential Buildings	1.999	3.182
91	Civil Engineering	2.007	3.102
92	Specialized Construction Activities	1.959	3.007
93	Wholesale & Retail Trade, Repair of Motor Vehicles and Motorcycles	1.540	2.388
94	Accommodation	1.672	3.450
95	Food and Beverage	1.9175	2.893
96	Land Transport	1.9169	2.853
97	Water Transport	2.100	2.839
98	Air Transport	2.279	3.139
99	Warehousing and Support Activities for Transportation	1.966	2.784
100	Services Incidental to Water and Air Transportation	1.517	2.392
101	Highway Operation Services, Bridge and Tunnel	1.333	1.768
102	Postal and Courier Activities	1.842	3.274

No.	Sector	Type I Output Multiplier	Type II Output Multiplier
103	Publishing Activities	1.709	2.655
104	Telecommunications	1.669	2.182
105	Motion Picture, Programming and Broadcasting Activities	1.973	2.766
106	Computer and Information Services	1.688	2.649
107	Monetary Intermediation	1.350	2.397
108	Other Financial Service	1.853	2.821
109	Insurance/Takaful and Pension Funding	1.433	2.053
110	Activities Auxiliary to Financial Service and Insurance/Takaful	1.610	2.546
111	Real Estate	1.548	2.265
112	Ownership of Dwellings	1.305	1.467
113	Rental and Leasing	1.636	2.691
114	Scientific Research and Development	1.497	2.465
115	Professional	1.525	2.863
116	Business Services	1.653	3.148
117	Public Administration	1.627	3.474
118	Education	1.302	3.435
119	Health	1.632	3.437
120	Defence, Public Order and Safety	1.509	3.482
121	Other Public Administration	1.536	3.446
122	Non-Profit Institutions Serving Households	1.961	3.379
123	Arts, Entertainment and Recreation	1.827	2.526
124	Other Private Services	1.622	3.188

Source: DOSM and EconWorks' analysis (Type II Multipliers)

Appendix II: Sectoral Breakdown of Output Effects from Consumer Spending on Grab

Table A2-1: Sectoral Breakdown of Output Effects from Consumer Spending on Grab, 2021

No.	Sector	Type I Output Effects	Type II Output Effects
1	Paddy	0.000	0.001
2	Food Crops	0.001	0.002
3	Vegetables	0.004	0.011
4	Fruits	0.002	0.004
5	Rubber	0.000	0.000
6	Oil Palm	0.048	0.068
7	Flower Plants	0.001	0.002
8	Other Agriculture	0.000	0.001
9	Poultry Farming	0.004	0.015
10	Other Livestock	0.003	0.005
11	Forestry and Logging	0.001	0.002
12	Fishing and Aquaculture	0.006	0.011
13	Crude Oil and Natural Gas	0.059	0.074
14	Mining of Metal Ores	0.000	0.000
15	Quarrying of Stone, Sand and Clay	0.000	0.001
16	Other Mining and Quarrying	0.000	0.000
17	Processing and Preserving of Meat	0.003	0.007
18	Processing and Preserving of Seafood	0.001	0.003
19	Processing and Preserving of Fruits & Vegetables	0.000	0.000
20	Dairy Products	0.000	0.006
21	Vegetable & Animal Oils and Fats	0.102	0.141
22	Grain Mill Products, Starches and Starch Products	0.001	0.005
23	Bakery Products	0.001	0.006
24	Confectionery	0.001	0.007
25	Other Food Processing	0.001	0.006
26	Prepared Animal Feeds	0.002	0.006
27	Spirits, Wines and Liquors	0.000	0.002
28	Soft Drinks, Mineral Waters and Other Bottled Waters	0.003	0.006
29	Tobacco Products	0.000	0.002
30	Preparation, Spinning and Weaving of Textiles	0.000	0.001
31	Finishing of Textiles	0.000	0.001
32	Other Textiles	0.000	0.001
33	Wearing Apparel	0.001	0.003
34	Leather Products	0.000	0.000

No.	Sector	Type I Output Effects	Type II Output Effects
35	Footwear	0.000	0.000
36	Sawmilling and Planning of Wood	0.000	0.002
37	Veneer Sheets and Wood-based Panels	0.000	0.001
38	Builders' Carpentry and Joinery	0.000	0.000
39	Wooden Containers and Other Wood Products	0.000	0.001
40	Paper and Paper Products	0.001	0.008
41	Furniture	0.000	0.002
42	Reproduction of Recorded Media	0.000	0.000
43	Printing	0.007	0.010
44	Coke and Refined Petroleum Products	0.179	0.221
45	Basic Chemicals	0.008	0.011
46	Fertilizers and Nitrogen Compounds	0.000	0.000
47	Paints and Varnishes	0.001	0.002
48	Pharmaceuticals, Medicinal Chemical and Botanical Products	0.000	0.003
49	Soaps & Detergents, Cleaning & Polishing, Perfumes and Toilet Preparations	0.001	0.002
50	Other Chemicals Products	0.003	0.006
51	Rubber Tyres and Tubes	0.024	0.025
52	Rubber Processing	0.003	0.004
53	Rubber Gloves	0.000	0.006
54	Other Rubber Products	0.001	0.003
55	Plastic Products	0.003	0.014
56	Glass and Glass Products	0.000	0.000
57	Refractory, Clay, Porcelain and Ceramic Products	0.000	0.001
58	Cement, Lime and Plaster	0.000	0.001
59	Non-Metallic Mineral Products	0.001	0.001
60	Basic Iron and Steel	0.001	0.002
61	Basic Precious and Other Non-Ferrous Metals	0.001	0.002
62	Casting of Metals	0.000	0.000
63	Structural Metal Products, Tanks, Reservoirs and Steam Generators	0.001	0.003
64	Other Fabricated Metal Products	0.003	0.006
65	Engines & Turbines, Fluid Power Equipment, Other Pumps, Compressors, Taps and Valves	0.000	0.000
66	Other General Purpose Machinery	0.001	0.003
67	Weapons, Ammunition and Special Purpose Machinery	0.000	0.000
68	Domestic Appliances	0.002	0.003
69	Computers, Peripheral, Office Equipment and Machinery	0.001	0.002
70	Electric Motors, Generators and Transformers	0.000	0.000

No.	Sector	Type I Output Effects	Type II Output Effects
71	Electricity Distribution & Control Apparatus, Batteries and Accumulators	0.003	0.004
72	Fibre Optic Cables, Electronic and Other Electric	0.001	0.003
73	Wiring Devices, Electric Lighting Equipment and Other Electrical	0.000	0.001
74	Electronic Components and Boards	0.011	0.019
75	Communication Equipment and Consumer Electronics	0.010	0.019
76	Irradiation Equipment, Electro Medical and Electrotherapeutic	0.000	0.000
77	Measuring Equipment, Testing, Navigating and Control	0.002	0.003
78	Optical Instruments, Photographic Equipment, Magnetic and Optical Media	0.000	0.001
79	Watches and Clocks	0.000	0.000
80	Motor Vehicles, Trailers and Semi-Trailers	0.012	0.024
81	Motorcycles	0.000	0.000
82	Ships, Boats, Bicycles and Invalid Carriages	0.006	0.008
83	Other Transport Equipment	0.000	0.000
84	Other Manufacturing	0.000	0.002
85	Repair & Installation of Machinery and Equipment	0.004	0.005
86	Electricity and Gas	0.022	0.034
87	Water	0.004	0.007
88	Sewerage, Waste Management and Remediation Activities	0.003	0.005
89	Residential Buildings	0.000	0.000
90	Non-Residential Buildings	0.000	0.000
91	Civil Engineering	0.000	0.000
92	Specialized Construction Activities	0.009	0.017
93	Wholesale & Retail Trade, Repair of Motor Vehicles and Motorcycles	0.113	0.177
94	Accommodation	0.002	0.005
95	Food and Beverage	0.031	0.061
96	Land Transport	0.008	0.011
97	Water Transport	0.005	0.007
98	Air Transport	0.001	0.002
99	Warehousing and Support Activities for Transportation	0.006	0.011
100	Services Incidental to Water and Air Transportation	0.004	0.005
101	Highway Operation Services, Bridge and Tunnel	0.017	0.020
102	Postal and Courier Activities	0.002	0.003

No.	Sector	Type I Output Effects	Type II Output Effects
103	Publishing Activities	0.001	0.002
104	Telecommunications	0.016	0.064
105	Motion Picture, Programming and Broadcasting Activities	0.000	0.002
106	Computer and Information Services	0.003	0.005
107	Monetary Intermediation	0.030	0.050
108	Other Financial Service	0.005	0.008
109	Insurance/ Takaful and Pension Funding	0.011	0.023
110	Activities Auxiliary to Financial Service and Insurance/ Takaful	0.002	0.007
111	Real Estate	0.005	0.015
112	Ownership of Dwellings	0.000	0.019
113	Rental and Leasing	0.001	0.001
114	Scientific Research and Development	0.000	0.000
115	Professional	0.018	0.025
116	Business Services	0.008	0.012
117	Public Administration	0.000	0.001
118	Education	0.000	0.008
119	Health	0.000	0.009
120	Defence, Public Order and Safety	0.000	0.000
121	Other Public Administration	0.001	0.003
122	Non-Profit Institutions Serving Households	0.000	0.001
123	Arts, Entertainment and Recreation	0.000	0.003
124	Other Private Services	0.003	0.005
125	Grab (own sector impact)	1.000	1.004
126	Household sector	-	0.402
	Output multiplier	**1.871**	**2.872**

Source: DOSM and EconWorks' analysis

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