

## Rules of Thumb for Interpreting Economic Multipliers

The economic multiplier has earned a poor reputation as grossly inflated or misinterpreted multipliers have been used to support otherwise unsubstantiated statements of economic benefit or loss. Used properly, however, the multiplier can be a useful tool for the first-order approximation of economic impacts expected from a project, special event, or other economic stimulus. This article provides a series of guidelines for the appropriate application and interpretation of economic multipliers and the estimates of economic benefit they generate.

### Multipliers Defined

The economic multiplier is named after the multiplicative effect that takes place in an economy following some initial injection (or withdrawal) of economic stimulus. It is calculated as the ratio of total direct (initial) and indirect (spin-off) effect to direct effect. To use an example, consider an increase in demand for manufactured wooden roof trusses. If the increase in demand is sustained, manufacturers will purchase more wood, hire additional staff, use more electricity to run machinery, and reserve additional space for ocean transport, and so on. Each incremental purchase or increase in expenditures on inputs to the manufacturing process, leads to increased spending by the suppliers to the manufacturer, and suppliers to these suppliers, and on it goes. When all of these incremental expenditures are summed, their total will be some multiple of the initial increase in demand for roof trusses – hence, the multiplier effect.

### Factors Influencing Multipliers

There are several factors which influence the size of an economic multiplier, its interpretation, and the overall economic impact they predict.

- ***The size and interpretation of a multiplier depends on how it is defined*** – There are many different types of multipliers. The more commonly used multipliers include direct and indirect (spin-off) spending per dollar of direct spending, direct and indirect value-added (GDP) per dollar of direct spending, direct and indirect employment per direct dollar spent, and indirect jobs per direct job created. Each yields a different answer. GDP or value-added multipliers are preferred over gross spending multipliers as they eliminate double-counting of expenditures (benefits). Regardless, it is important to know exactly what is being measured, especially when comparing multipliers and the economic impacts from different projects or events.
- ***Multipliers are specific to regions and economies*** – Multipliers generated for one region or economic area (e.g., city, regional district, province, or country) may not be appropriate for use in another economic region or area if their economies differ significantly. Similarly, multipliers created specifically for one project may not be applicable to other projects, particularly if the spending profile or ratio of imported to domestically supplied inputs differs significantly.
- ***The total economic impact of a project is a function of both the size of the multiplier and the amount of the direct stimulus*** – Large projects generate larger total impacts than small projects, everything else held the same, even if the multipliers for both are the same size.
- ***Large diversified and integrated economies generate larger multipliers than smaller, less diversified economies*** – Large, diversified economies tend to rely less on imported goods and maintain a greater number of internal linkages between local businesses, and between local businesses and residents. Each linkage provides another opportunity for a dollar to generate incremental economic activity.
- ***The more linkages the industry has to economy and the greater the value of these linkages, the larger its multiplier effect.*** A direct stimulus to an industry with strong forward and backward linkages in the local economy will, everything else held the same, generate a relatively larger economic impact than an industry with fewer ties, or one that relies more heavily on imported goods.

- **Highly import-intensive projects have smaller multipliers than projects that use more locally sourced inputs** – Purchases of imported goods, while necessary for many projects and businesses, mean that a portion of the direct economic stimulus leaves the local economy. The greater the reliance on imports, everything else held equal, the smaller the local economic impact.
- **Multipliers may not include the effect of workers spending their incremental income** – When a project leads to an increase in wages and salaries paid for workers, they will eventually spend a portion of this incremental income on goods and services, thus adding to the multiplier effect. Some models that calculate multipliers do not explicitly include this “induced” effect.
- **Multipliers do not tell us how long the impacts will last** – Capital projects typically have a number of distinct phases – pre-construction (design/planning), construction, start-up (plant commissioning), and operation. Each phase has its own multiplier effect. Construction phase impacts can often be significant, but relatively short-lived compared to the operation phase impacts which can be smaller but sustained over the period of several decades. Interviews with project engineers and other staff help to define the duration of the direct spending rounds. Their information is also useful for qualifying the duration of the indirect economic impacts.
- **Projects that add relatively little value to a raw product will have smaller multipliers than projects that add more value to the product** – Increasing the value-added to raw material generally requires the application of more inputs, including labour, thereby increasing the number of interactions (purchases) within the local economy, and ultimately the size of the multiplier.
- **Traditionally defined economic multipliers treat all expenditures as creating positive economic benefits** – Economic multiplier analyses typically fail to acknowledge that spending can negatively impact other economic agents (e.g., businesses that lose market share due to the new entrant) or the environment (e.g., air or water pollution). Similarly, spending to remediate an event or activity that has negatively impacted the environment or the economy (e.g., spending required to clean up an oil spill), taken in isolation, will appear as an economic benefit. The growing awareness of the role of humans in climate change and the movement towards monetizing or otherwise quantifying this role, means that economic multiplier analyses alone will be insufficient in accounting for a project’s net benefit.

### Moving Beyond Simple Multipliers

Comprehensive economic impact analyses, while more time intensive, vastly improve the accuracy and representativeness of the estimates of economic impact generated for capital projects, expenditure scenarios, or economic events.

For construction projects, information gathered through interviews with project managers, engineers, and procurement officers is used to detail direct spending. Purchases of goods and services are identified and the ability of local suppliers to meet these demands evaluated.

Mathematical models constructed specifically for the project, or accessed through government statistical agencies like Statistics Canada and the U.S. Department of Commerce, provide the quantitative foundation for evaluating the magnitude and distribution of the indirect economic effects on employment, household incomes, and gross domestic product. Specially constructed modules may be used to estimate the impact on government revenues.

Interviews with local businesses, economic development officers, and other economic stakeholders are highly recommended. They provide valuable community-level information to refine the data used in modelling and to aid in the interpretation and refinement of the results. The consultative process also serves an important role in building awareness and support among community stakeholders.

Increasingly important, comprehensive economic impact analyses are supported with an accounting of the environmental consequences of the project.

In summary, it is not surprising that multipliers have earned a poor reputation given their limitations and easily misunderstood nature. They should be always be applied with caution and interpreted with a critical eye. Adopting a more comprehensive approach to evaluating the economic and environmental spin-offs and relationships offers numerous benefits – credible and defensible estimates of economic and environmental impact, detail on the distribution of the impacts, involvement of community stakeholders, and a rigorous analytical framework.

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