Practitioners' Notes on Monitoring and Results Measurement

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Using Multipliers to Estimate Impact

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Multipliers can be a cost-effective tool to estimate broader impacts such as employment creation. Programs need to validate existing multipliers or need to develop their own sector and context specific multipliers. This Practitioners' Note aims to assist programs to assess when multipliers may be appropriate to use, how to use existing multipliers and how to develop multipliers. This Practitioners' Note focuses on the decision-making process; for the more technical aspects, reference is made to other publications and case studies.

1 Why use multipliers?

Practitioners want to measure the broader effects of their programs but assessing these effects in practice is complicated. They would like to be able to estimate broader results based on a narrower and easier to measure change. This challenge is particularly true for job creation which can be difficult to estimate and which can also take longer to occur. If programs don't report the broader effects, they are underestimating and underreporting the impact they achieved. This affects the cost-benefit-analyses of the program negatively. Programs see multipliers as a possible solution to this problem.

Although multipliers can be developed and used to assess various types of broader effects, such as incomes of market players and target beneficiaries, most programs would like to apply multipliers to estimate job creation. Job creation can occur in three categories: direct employment, indirect employment and induced employment.

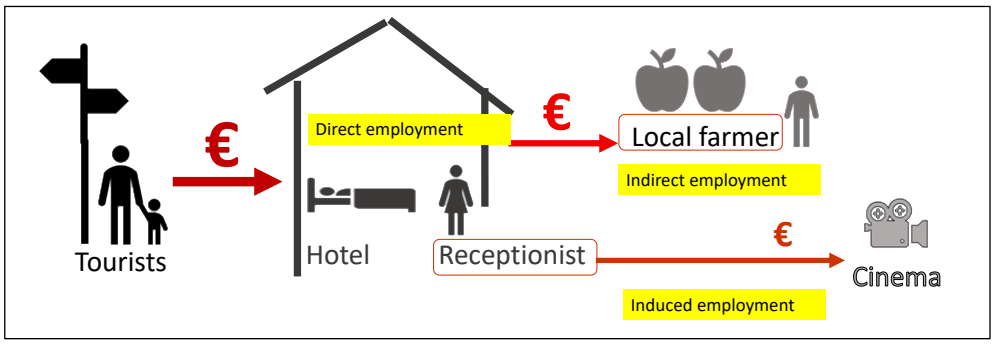

Fig 1 Visualization of direct, indirect and induced employment by Swisscontact

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Direct employment. For example, when farmers expand the area under cultivation as a result of a program intervention, farmers are likely to hire additional labor for planting, weeding and harvesting the additional area under cultivation. Most programs assess these employment changes by including specific questions during monitoring visits and surveys. These questions can make those interviews lengthy and the analysis rather complex. If the program would have a multiplier, in other words, know the formulaic relationship between the area under cultivation and number of jobs created, the program would only need to measure the area under cultivation, and apply the multiplier to know and report the number of jobs created.

Indirect employment. For example, programs that are active in the tourism sector often aim to increase the number of tourists visiting the country to increase incomes and jobs for actors in the tourism sector. However, an increase in the number of tourists is likely to impact other sectors too. If hotels and restaurants need to serve more tourists, they will probably procure more agricultural products from local traders. If farmers supply more goods, their incomes increase and they possibly employ more labor as well. Estimating these income and employment effects is challenging. If the program would have a multiplier, in other words, know the formulaic relationship between the number of tourist visiting the area and the number of jobs created in other sectors, then the program would only need to measure the number of tourists visiting, and apply the multiplier to know and report the number of jobs created in other sectors.

Induced employment. Additional income for employees is likely to lead to these employees spending more money in the local economy. They buy more goods and services. That increased demand leads to more production and services in other sectors, leading to more income for the local enterprises in those sectors, possibly leading to more jobs. Estimating this induced employment effect is even more challenging because the causalities are more complex, less evident and influenced by many more factors.

2 Why is using multipliers challenging?

A multiplier is any measure of the proportional effect on an exogenous variable on an endogenous variable[1]. As shown in the above examples, it means that practitioners aim to understand the relationship between two variables, express that relationship in a formula, and then assess the changes in one variable and calculate the changes in the other variable.

Take the first example of the increased area under cultivation and employment creation. If farmers don't employ permanent staff but always hire casual laborers, then each additional task probably leads to more casual labor being hired. That additional labor can be expressed in Full Time Equivalents (FTE). In practice, that means that additional FTEs translate into additional income for these laborers. However, if farmers employ permanent staff, the question is whether additional tasks also lead to more employment. In some cases, employees are not fully productive, hence they will be able to include these additional tasks without changing their employment contracts. Additional FTEs are thus created, yet they don't lead to more income for these employees.

[1] www.wikipedia.org

The publication Employment Dynamics in Key Agricultural Sectors of the Fijian Economy describes how the Market Development Facility (MDF) developed a multiplier to estimate direct employment creation.

In the tourism example, the same complexity arises. Will restaurant owners hire more waiters if the number of guests increase? Will the hotel hire more receptionists if the number of guests increase? The answers to both questions are probably different, and it is likely that there is 'delay' between the increase of tourists and the resulting additional employment effect. That means that multipliers should be based on these marginal expenditure impacts: what does it take for employers to create an extra job?

The publication Applying multipliers to tourism in Kosovo describes how the Promoting Private Sector Employment program (PPSE) developed multipliers to estimate direct, indirect and induced employment.

The above examples illustrate that applying multipliers is not as easy as practitioners sometimes hope; the devil is really in the details. Using existing multipliers from secondary sources would be easy, but the program needs to verify whether the multiplier is appropriate. If there are no existing multipliers that the program can make use of, the program has to develop their own multipliers. This implies that the program needs to invest resources first, but once it has developed the multipliers, the program only needs limited resources to estimate and report those broader effects during the implementation period. This doesn't mean less resources can be allocated to the results measurement system; the program still needs to assess if interventions lead to projected higher-level changes, such as expansion and additional incomes.

3 Using existing multipliers; what are the challenges?

Programs can make use of an existing multiplier from a secondary source. However, programs first need to assess the appropriateness of existing multipliers, by considering the following questions:

- **Is the multiplier valid for the sector**? Multipliers are often sector specific and there are differences in structure and dynamics among sectors. Practitioners need to compare the sector for which the multiplier was developed with the sector in which they intend to apply the multiplier. To what extent are the dynamics, supply chains, and market forces similar?

  Multipliers exist for one fruit within the fruits and vegetables sector in a certain region. Can the program use that multiplier for another fruit? Can it use the multiplier for all fruits? Only a good understanding of the multiplier and the sectors will provide the answer.

- **Is the multiplier valid for the region?** Multipliers are often developed for a certain region. Practitioners need to compare the context where the multiplier was developed with the context where they intend to apply the multiplier. For instance, is the infrastructure the same, are labor markets functioning in a similar fashion?

> Multipliers for induced employment exist for tourism in Croatia. Can a program active in the tourism sector in Macedonia use these multipliers? The answer can only be given after studying the multiplier and analyzing the underlying factors, assumptions and differences.

- **Is the multiplier valid at this point in time?** Sector dynamics, structure and market forces change over time. Practitioners need to determine the extent to which the sector characteristics have changed from when the multiplier was developed to the proposed time of application to determine if the multiplier is still appropriate.

> Multipliers exist to estimate indirect employment effects due to organic farming in the Netherlands. Say they were developed in 2005; can the multiplier be used in 2018? Organic farming has changed drastically over the past ten years: markets changed, supply and distribution changed, the sector had exponential growth and new actors entered. Probably the multiplier is no longer valid.

- **Is the multiplier methodology correct?** Practitioners should verify if the multiplier calculation and the underlying assumptions are sufficiently sound. Often this is challenging since multipliers are not always presented in the most transparent manner.

> In some cases, practitioners found that there were two existing multipliers from two sources; one significantly higher than the other one. Taking a conservative approach, they opted to use the lower one. However, the main problem was that there was insufficient insight and understanding how these multipliers had been developed. The answer is not to take the higher or lower one but to find out more about the calculation that has been used and the assumptions that have been made.

Assessing the appropriateness of the existing multipliers, by considering the above questions, often implies that programs can't use existing multipliers from secondary sources. In case programs wants to apply appropriate multipliers, they often need to develop them first.

4 Developing multipliers; what are the challenges?

Developing multipliers requires technical expertise and access to data.

Technical expertise. Developing multipliers requires a thorough understanding of the dynamics, structures and relations between the various variables. Developing multipliers also requires specific technical expertise. Thus, the program needs to develop that expertise, or needs to seek external assistance to develop a multiplier.

The **Market Development Facility** (MDF) in Fiji hired the services of a specialist to develop a multiplier. The Terms of Reference specified that the consultant would do a literature review, review existing primary and secondary data, lead the additional field research, develop the multiplier and write the report. The consultant took the lead in the development of the multiplier supported by three results measurement specialists from MDF. Some 20 consultancy days were allocated to the consultant. The MDF team participated in most steps.	The **Promoting Private Sector Employment** (PPSE) program developed multipliers for the tourism sector in Kosovo. The in-house results measurement specialists undertook a literature review, sought external advice, and learned how to develop multipliers by studying existing multiplier methodologies in tourism developed by specialists. They then developed multipliers for their program, tested them and continue to improve them.

Data. Access to relevant and reliable data is another challenge. In most sectors, some studies or statistical information from secondary sources is available and can be used. In most cases additional primary research is needed to collect and analyze specific data. This may absorb considerable financial and human resources. Multipliers can only be developed and used if the program's monitoring and results measurement system generates sufficient data and information.

The **Market Development Facility** (MDF) in Fiji developed a multiplier to estimate employment creation as the result of its interventions in the horticultural sector. The program first analyzed the existing baseline MDF had undertaken for its interventions. Then they obtained and analyzed secondary data for the various crops. Only after calibration of these data, the program conducted additional and targeted primary research to gather information on employment through in-depth interviews, focus group discussions, and purposeful small surveys. MDF was then able to triangulate and adjust for consistency and validate the findings with implementation staff. Only then, the program developed the multiplier for employment creation for this sector.

Mohammed Muaz Jalil, Consultant

5 What to consider when multipliers need to be developed?

Developing multipliers is thus an investment and only pays-off if the multiplier can be used more often: multiple times or for a significant part of the portfolio. Programs have to assess if the investment is worthwhile by considering these questions:

- **How significant is the impact?** How much employment is being generated? Most programs should have a good understanding of the significance of the additional direct or indirect employment that is being created by the program. How significant is it? Programs should also have a good understanding where that employment is being created; which interventions, which sectors, which regions?
- **How important is it to be able to estimate and report the impact?** Programs should use their limited resources to monitor and measure results efficiently. Although it may be tempting to assess all broader impacts the program achieves, the program may have to decide that it only allocates resources to estimate where impact is most significant.

- **How much resources and time will it take to develop the multiplier?** Are secondary data readily available? How much additional primary research is required? Often, multipliers can only be developed after impact assessments are done and primary data are available.
- **How long can the program use this multiplier to estimate and report impact?** How dynamic is the sector; will it change drastically very soon? A very volatile or emerging sector is likely to change, reducing validity of the multiplier. A steadily growing sector is less likely to change, hence making it possible to use the multiplier over a longer period of time.
- **How easy or difficult is it to adjust the multiplier over time?** If sectors change, can the program adjust the data and multiplier calculation easily, or does it require another investment to gather new information and develop completely new multipliers?
- **How easy or difficult is it to apply the multiplier model to other sectors**? If the multiplier has been developed for one sector, can the same multiplier model be applied, by using the data of the other sector? If structures and dynamics are similar, it is probably easier than when sectors are very different in dynamics, structure and context.

When updating the multiplier calculation with new, up-to-date information, the assumptions and calculation method stay the same, and we term this *adjusting the multiplier*. When data sources, assumptions and the actual calculations change, we termed this *developing a new multiplier*.

The **Market Development Facility** (MDF) in Fiji aims to increase productivity and production of farmers in the horticultural sector (among other objectives). The program has three types of interventions: partnering with input companies to enable farmers to use better inputs, partnering with agro-exporters to increase demand and partnering with companies to offer extension services. Most employment was expected from only two of these interventions. Hence the multiplier was developed for only two out of three types of interventions. Mohammed Muaz Jalil, Consultant	The **Promoting Private Sector Employment** (PPSE) program aims to increase growth in the tourism sector and partners with accommodation providers, restaurants, souvenir shops, transportation companies, tour operators and attraction providers. The program reasoned where employment creation is likely to be most significant and therefore developed only multipliers to assess the employment effects due to their work with hotels and restaurants. Tanjima Ali, MRM specialist, PPSE

Answering the above questions may lead to a program concluding that multipliers are not a viable option to estimate the employment effects. This doesn't mean that employment effects can't be estimated, can't be used for decision-making, and can't be reported. For example, the program may undertake case studies to understand job creation effects in specific cases and how the program influences them. That may be enough information to use for decision making. Programs may also report job creation effects narratively, more qualitatively than quantitatively.

6 Summary of pitfalls and tips for developing and using multipliers

The table sums up ten typical pitfalls and tips from practitioners.

Pitfalls	Tips
Aiming to always estimate impact whenever it occurs	Focus on where the main impact will be. Developing a results chain showing how employment may be created in a particular sector helps to prioritize. Estimating each and every form of impact will absorb considerable resources.
Aiming to use one multiplier for multiple forms of impact	Assess in detail how the program interventions create impact. Often, that is due to different causal effects, hence requiring several multipliers, one for each causal effect.
Ignoring marginal increments	Assess the expected delay between the two variables. In most cases, increased turnover doesn't lead in a linear fashion to employment creation.
Using existing multipliers	
Using existing multipliers blindly	Verify if the multipliers can be applied or need to be adapted; don't use multipliers that can't be verified.
Developing multipliers	
Developing multipliers without providing insight	Be transparent and document the methodology, assumptions and limitations. Users should understand the multiplier and know when, where and how it can be used.
Depending on either secondary or primary data only	There is always inaccuracy and bias. Hence, assess the quality of the data and combine and triangulate primary and secondary data to aim for the middle ground.
Assuming secondary data are reliable	Verify the data: how were they collected, what were the assumptions that have been made, how accurate are the data, how consistent are the data, how up-to-date are the data?
Inconsistencies in data sets over time	To develop multipliers, data should be comparable over time. If over time, the program monitoring and results measurement system uses different indicators or adapts different methods to collect primary data, comparisons are challenged. Ensure that the primary data gathering is sufficiently sound and methods and definitions will not change over time.
Oversimplifying causalities and variances	The devil is in the details; median values are less influenced by outliers compared to average values; labor dynamics vary per sector, region and over time; data differ per subsector, process stage and per region.
Reporting results	
Reporting numbers only	Elaborate on how the numbers were obtained: the method and its limitations. Multipliers only give quantitative information; additional research and narratives are needed to provide meaning to the numbers.

7 The Bottom Line

Multipliers can be an efficient tool to estimate broader impacts such as employment creation. Once available, they require limited resources. However, programs need to validate existing multipliers if they would like to use them. Often existing multipliers are not appropriate, so programs need to develop their own sector and context specific multipliers. This requires an investment and programs should assess how beneficial the investment is in relation to the benefits it brings. It certainly is a valuable tool, yet it isn't a silver bullet.

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