Why the need for employment impact assessment?

Recent experience has shown that it is not only economic growth, but also the pattern of growth which matters for sustainable and inclusive development. Recently, there is a world-wide phenomenon of job-less growth. Employment generation is a key element for an inclusive and job-rich growth strategy contributing to reduce poverty, income inequality and spurring sustainable development. Income through employment is a primary source of income for poor household groups. Therefore, creating additional employment opportunities and/or raising the income of the existing employed population is a central theme in most poverty reduction strategies.

A typical poverty reduction strategy will often promote investment projects that are geared to achieve an agreed level of poverty reduction by increasing (or enhancing) returns to labour. Since investment is a key element for employment generation, a natural question in the mind of development planners relates to the efficiency of such investments to total employment generation over short, medium and long-term time horizons. To help developing policy strategies which creates jobs or enhances job creation, a tool known as a “dynamic social accounting matrix” has been developed.

What is a Dynamic Social Accounting Matrix and how does it work?

A Social Accounting Matrix (SAM) is an accounting framework, where major socio-economic datasets of an economy are brought together in a consistent way representing the full economic circle of an economy (See Breisinger, C., Thomas, M. and Thurlow, J., 2010: Food security in Practices, An Introduction with Exercises, Washington, D.C.). It includes input-output table, reflecting the consumption and production pattern of an economy, but also transactions and transfers of incomes among the sectors of an economy, households, enterprises and government, thus completing the economic circle.

A SAM is a matrix summarizing all monetary transactions within an economy. Total expenditures must equal total income. Satellite accounts with physical data, such as employment data, can be added to a SAM. A SAM calculates economic and employment multipliers for an economy, including their corresponding linkages throughout economic sectors, institutions and households. Direct, indirect and induced multiplier effects of public policies can be derived.

A public infrastructure investment in a school building, for example, creates direct jobs for people that are building the school, but also indirectly for the suppliers of equipment and material used in the building (glaziers or cement producers) leading to additional jobs and higher income-this is called intra-account effect. Such a construction boom leading to higher income of people involved will result in a consumption boom, called induced effect, which will generate economy-wide impacts such as higher tax collection.

While a static SAM gives a snapshot of the economy for a single period of time, a dynamic SAM (DySAM) shows the consistent evolution of the economic structure over time, for periods covering the years before and after the static SAM. Several sequential SAMs over time imply dynamics. Over time, shifts reflect technology choices.
A DySAM also lessens the need to calculate expenditure income elasticities in order to introduce behaviour. It is not a pure accounting tool anymore, since it already includes the main elements of a simple, consistent and transparent economic modelling tool. The DySAM has been developed further to improve labour market analysis. It has been extended and includes an employment satellite account with disaggregated labour market data. Moreover, a simple form of labour and investment demand function has been added reflecting the expansion or contraction of the economy.

**How to construct a DySAM?**

A variety of datasets and sources, including national accounts, flows of funds, budget data, input-output table, household and labour force surveys, are needed to build a SAM. When data from various sources are combined to construct a SAM, inconsistency issues (e.g., between national account data and aggregate figures from input/output tables) occur frequently. These issues have to be tackled through a number of statistical and mathematical techniques. Once a consistent and balanced SAM has been constructed, economic multipliers and other indicators, such as employment multipliers, can be calculated.

A specific “employment satellite account” with physical variables can be added with labour market details such as sex, age groups, skill level, geographic location or income level. These labour market data have to be harmonized with the Activity account of the SAM. This allows a more detailed analysis of the labour market and hence a better targeting of groups of workers in policy design. Other accounts with real variables can be added such as environmental account (e.g. CO2 emissions) or a household account.

The methodology for building a dynamic SAM entails the following elements:

i) assessing and validating the existing static SAM;

ii) constructing a time series of macro control totals (e.g. one value for activities-household cell) in line with SAM accounts;

iii) constructing the dynamic sectoral SAM (e.g. activity account now with value for each activity, e.g. textile, fishery, infrastructure); and

iv) computing the sequence of multipliers and linkages.

Once the derivation procedure of a dynamic macro SAM and the balancing of the SAM has been undertaken, the existing static SAM is transformed into a dynamic SAM. This will be done by linking the structure of the static disaggregated SAM to a dynamic macro-meso control framework. The control flows are incorporated into the static SAM as it becomes dynamic and moves forward in time.

The employment impact of the fiscal stimulus package in Indonesia

The Government of Indonesia reacted swiftly to the anticipated impact of the global financial crisis by announcing a fiscal stimulus package worth 1.4 per cent of GDP. It was intended that the package would help to cushion the impact of the crisis by boosting consumption and by easing the financial distress of companies through the provision of tax cuts, subsidies and labour intensive infrastructure spending. The job creation outcomes of the spending were of key concern to policy makers. The DySAM model was used to estimate the economic and employment implications of the spending and it was found that in total the fiscal stimulus created 1.2 million additional jobs in 2009.

Further analysis of the various components of the package reveal differences in the impact of the spending on target groups and sectors of the economy. For example, 18 per cent of the package was spend on infrastructure investment, mostly on labour-intensive infrastructure and this generated approximately 300,000 full-time equivalent jobs. The employment share of labour-intensive road construction was three times higher than for capital-based road construction. Jobs went mostly to male workers and new jobs were predominantly (59 per cent) created in the rural area. Put into perspective, this spending amounted to only 0.19 per cent of GDP and generated about 1.6 per cent of GDP growth.

The DySAM model also reveals that compared with other measures such as tax cuts, subsidies, social transfers, etc., infrastructure spending was more effective at targeting low income workers and creating employment.


Use and scope of DySAM

A DySAM is a helpful analytical tool mostly for two functions:

1. Simulation of future policies, programmes, investments or potential exogenous shocks such as economic crisis, free trade agreements or natural disasters

2. Evaluation of the effectiveness of past policies, programmes, investments or the effect of past shocks

It is therefore most helpful not only for policy makers in line Ministries, but also at the central level such as Finance, Planning Ministries or the President’s office. It may also support managers of major Government Programmes in the evaluation and design of programmes, as well as the development partners supporting these programmes.

The DySAM’s major strength is that it provides a better and more up-to-date understanding of the impact of macro policies throughout the economic sectors and on specific groups of workers and households at the meso micro levels. The easy use of satellite accounts allows the inclusion of new aspects of analysis, e.g. on climate change, green jobs, further details on social protection, among others. A DySAM analysis can compare different policy options and also different technology choices and production methods with the purpose of identifying the most effective options in terms of costs, GDP growth, employment (for specific workers), poverty or inequality reduction.

The employment implications of the ASEAN–China Free Trade Area

The ASEAN–China Free Trade Area (ACFTA) is seen both as an opportunity and a challenge in Indonesia. There are concerns that increased import competition may damage industrial sectors, but there is also an acknowledgement that the ACFTA would open up new export opportunities for the agricultural sector. As creation of productive jobs is a key policy issue for policy makers, it is important to understand how trade changes influence sectors of the economy and how this then influences job creation and job loss.

The dynamic social accounting matrix can be applied in combination with a trade simulation model (the SMART model) to assess the impact of implementation of the ACFTA tariff reductions and determine what this means for the Indonesian labour market. The methodology provides insight into the structural implications that the policy would have on the economy.

Findings reveal that the total impact on employment is relatively small and slightly negative for Indonesia. The sectors vary in their employment sensitivity to trade changes. It has been shown that this is not only as a result of labour intensity, but also due to differing supply and demand links with particular sectors as well as income effects. Agriculture creates the most new jobs, especially in the plantation sector (palm oil, rubber, cocoa, coffee), but within the sector there are also job losses (e.g. in livestock) according to the analysis. The manufacturing sector would mostly have to deal with net job losses, taking textile as a prominent example. Job gains are higher in the rural than in the urban area (see table). Also female and young workers, especially in the urban area, would be more vulnerable, as sectors where they are dominantly active (textile for women, as well as the hotel and banking sectors for young people) experiences net job losses.

<table>
<thead>
<tr>
<th>Employment outcomes of China-ASEAN FTA in 2009</th>
<th>Urban Male</th>
<th>Urban Female</th>
<th>Rural Male</th>
<th>Rural Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job losses from import competition from China</td>
<td>-82040</td>
<td>-66783</td>
<td>-84821</td>
<td>-63493</td>
</tr>
<tr>
<td>Job gains from increasing exports to China</td>
<td>50694</td>
<td>40139</td>
<td>79854</td>
<td>54328</td>
</tr>
<tr>
<td>Net employment gains / losses</td>
<td>-31346</td>
<td>-26644</td>
<td>-4967</td>
<td>-9164</td>
</tr>
</tbody>
</table>

Figures in full time equivalent

Due to the different characteristics of the agricultural and manufacturing sectors and the needs of different target groups, it will be important for Indonesia to identify appropriate labour market policies that can help to mitigate social costs and to maximize potential benefits of the ACFTA. Importantly, sectoral analysis of issues such as trade changes with the DySAM model provides scope for policy makers to come to grips with the implications of such agreements and create space to formulate policies that would minimize adjustment costs and inform the parameters of future trade negotiations.

A DySAM is based on a relatively simple accounting framework to which time series data and few simple economic equations have been added. As it is relatively simple and transparent, it is a powerful tool for analysis, which can be used by a relatively large group of technicians. It combines different levels of analysis: macro policies and their impact on economic sectors and on groups of economic agents at meso-micro levels. It includes a time-dimension and provides the basis for economic modelling by relaxing some of the strong assumptions used in static SAM modelling. Changes of technology and consumption pattern can therefore be well reflected in a DySAM. A DySAM can be combined with physical data, therefore extending its applicability to other areas beyond economic analysis (e.g. labour market, environment).

The challenge ahead is 1) to broaden its potential application on new issues (e.g. social protection, youth employment, child labour, financial instruments, provincial or regional disaggregation) and 2) to include more realistic economic and non-economic modelling relations (e.g. investment and labour demand function) without having to develop more complex analytical tools.

Deforestation in Mozambique: How to reconcile environmental and employment objectives

The employment consequence of climate change is an important issue on the agenda of many countries throughout the world. Incentives are being provided to become more energy and resource efficient, to reduce deforestation and to shift to a low carbon economy – all of which has implications for the labour market and livelihoods. Planners need to find ways to address climate change targets, while meeting economic and employment objectives.

The DySAM offers a platform for bringing together economic, employment and environmental concerns through its accounting multiplier framework and satellites accounts. This offers the possibility to consider the impact of provision of incentives on carbon emissions, economic growth and employment creation. Policy makers can use this instrument to assess the structural shifts that would promote inclusive and sustainable growth and develop policy measures designed to mitigate social costs and harmonize development outcomes in order to mitigate climate change.

A recent ILO study for Mozambique uses a DySAM with a carbon emission satellite account for economic activities and actors. It shows that households are the strongest emitters of carbon through the consumption of solid biomass. In order to reduce these carbon emissions, a strategy has been proposed which would also contribute to raising employment: sustainable forest management and the installation of solar panels. The first strategy reduces carbon emissions by reversing deforestation and thus creating new jobs for the low skilled. The second strategy helps to replace solid biomass consumption with solar energy, thus creating jobs for low skilled and skilled workers that will have a multiplier effect throughout the economy. A recovery of the Mozambican forest will also contribute to reduce its vulnerability to natural disasters that most poor people in rural area are exposed to, and therefore contribute to climate change adaptation. Such a strategy reduces vulnerability, especially in rural areas, and creates new sources of income.


For more information, please contact:

International Labour Office
Employment Intensive Investment Programme
4, route des Morillons | 1211 Geneva 22, Switzerland | Email: eiip@ilo.org