

IMPLAN, RIMS-II, and REMI Economic Impact Models

Comparisons, in Context of EB-5 Analysis

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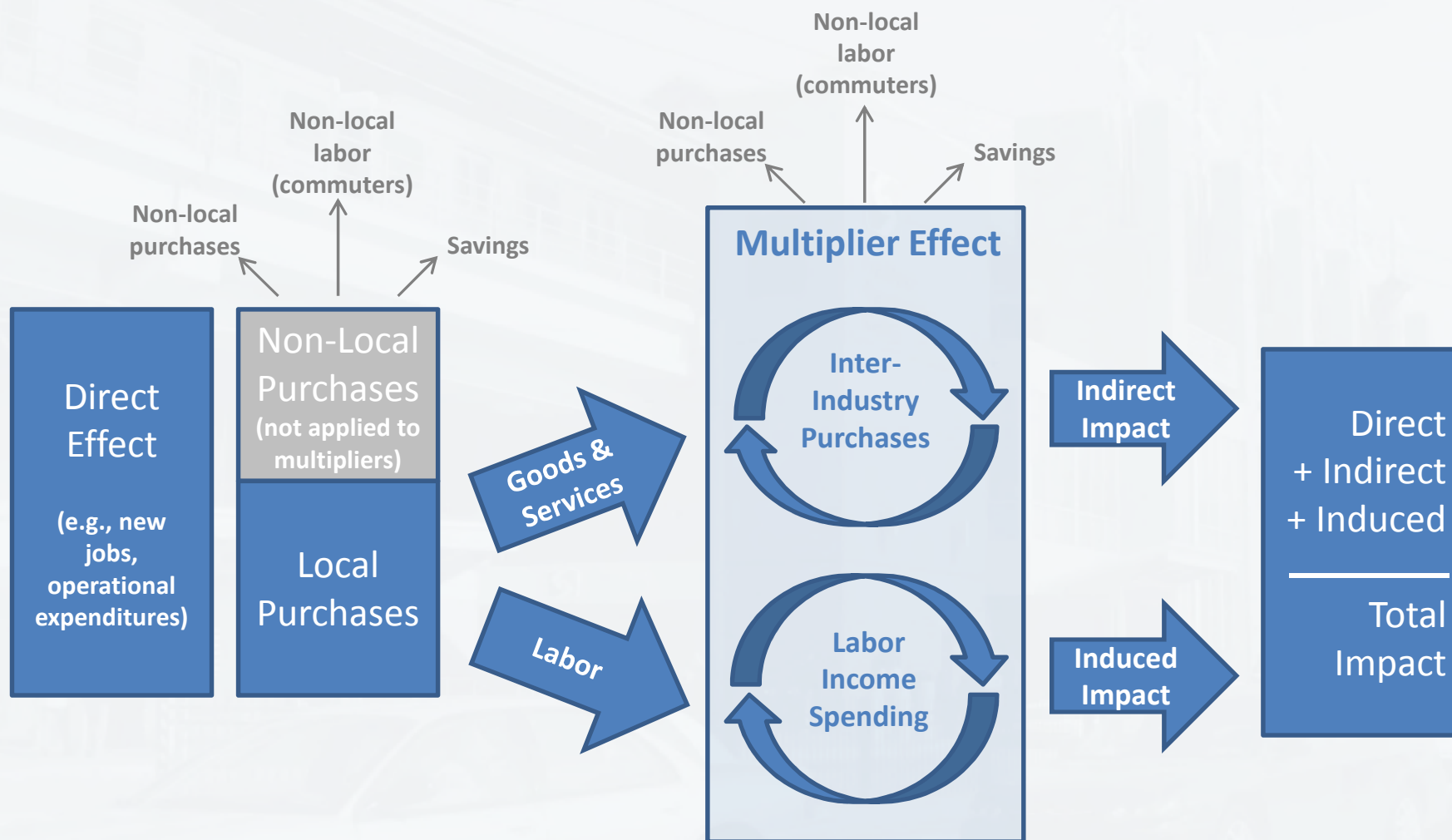


Economic Impact Models: Three Key Players

- There are three widely-utilized models for economic impact analysis:
 - 1) **RIMS-II** (Regional Input-Output **M**odeling **S**ystem)
 - 2) **IMPLAN** (**IM**pact Analysis for **PLAN**ing)
 - 3) **REMI** (Regional **E**conomic **M**odels, Inc.)
- Each model uses as a primary foundation the US Department of Commerce Input-Output tables, which were first developed in the 1970s.
- The simplest model is RIMS and the most complex is REMI, which layers econometric modeling techniques onto the basic input-output modeling.

Input-Output Modeling: The Fundamentals

- The diagram presented on the next page provides a conceptual overview of how input-output models work.
- The models start with a direct effect. The direct effect can be expressed as either a number of jobs (e.g., 10 jobs at an accounting firm that have moved into the region) or an expenditure (e.g., the firm's annual operating expenditures).
- Some of the dollar amount associated with that direct effect will represent local purchases – that is, purchases that will generate additional economic impacts within the local economy. The rest, shown in gray on the slide, either leaves the local economy or is retained through savings, and will not lead to further spending.
- Local purchases are broadly divided into the purchase of goods and services and the purchase of labor. Both set off repeated rounds of economic activity.
- By way of example: An accounting firm purchases paper from the office supply store, the office supply store purchases employee uniforms from a local clothing store, the clothing store pays a local cleaning service to clean the store, and so on. Each round of inter-industry purchases generates fewer local effects until all of the money originally spent leaks out of the region.
- This is typically referred to as the *multiplier effect* or the *ripple effect*.
- Local purchase of labor works in the same manner, with workers spending their incomes on all manner of goods and services such as food, clothing, school, housing, and visits to the doctor.
- The sum of the direct, indirect, and induced effects equals the total economic impact.



Note: Diagram is illustrative and is intended to provide an overview of Input-Output modeling, not a full representation of model inputs and structure.



RIMS-II

Year Developed: 1970s
Owner: U.S. Government (US Department of Commerce)
Type of Model: Input-output

Advantages of RIMS-II	Limitations of RIMS-II
<ul style="list-style-type: none">• Transparency – RIMS is essentially a set of multipliers. These multipliers are applied manually by the user, facilitating methodological transparency.• Cost – Inexpensive (\$275 per region, with a region consisting of one or more contiguous counties)	<ul style="list-style-type: none">• Ease of use – No user-friendly interface.• Breakdown of impacts – RIMS analysis shows total economic impact, but does not show a breakdown of impacts by industry (e.g., 100 new hotel jobs generates 9 indirect and induced jobs in food services, 2 new jobs in advertising, etc.). In addition, the user must separately apply different sets of multipliers to yield indirect versus induced impacts.• Adaptability – Multiplier tables are generated by BEA. User can not modify industry production functions (dictating how much of which products and services one industry purchases from all other industries) or trade flow assumptions to reflect particular business/industry being analyzed, and can not import new industries to the region being analyzed (important if the region does not include the type of business for which the impact analysis is being conducted).• Static – The multipliers reflect industry linkages in a local economy at a given time. They do not account for price elasticities, changes in consumer or industry behavior based on a direct effect, etc.• Fiscal impact – Does not include information needed for estimating fiscal (tax) impacts.• No multi-regional modeling – RIMS-II is a single region I-O model. It ignores any feed-back that may exist among regions.• Time – Total economic impacts are presented; time required for that impact to be realized (for all ripple effects to complete) is unspecified.



IMPLAN

Year Developed: 1984
Owner: Private (The IMPLAN Group LLC – formerly MIG, Inc.)
Type of Model: Input-output

Advantages of IMPLAN	Limitations of IMPLAN
<ul style="list-style-type: none">• Ease of use – IMPLAN is a modeling system (rather than a set of multipliers that need to be applied manually by user, as for RIMS)• Adaptability – User can modify production functions and trade flow assumptions, and introduce new industries to the region being analyzed.• Multi-region modeling – User can study the effects of changes in one region on the economy of another region.• Fiscal impact – Includes fiscal (tax) impact function. (Note: Although IMPLAN offers fiscal impacts, AKRF estimates these independent of the model for more reliable results.)• Small geographies – Analysis can be done for geographies comprised of zip codes, not just counties or states.• Breakdown of impacts – IMPLAN shows breakdown of impacts by industry, and direct, indirect, and induced impacts on one screen.	<ul style="list-style-type: none">• Transparency – Because IMPLAN is a modeling system that does not require the user to select and manually apply multipliers, the process may appear to be less transparent to reviewers who are not experienced in IMPLAN.• Static – As with RIMS-II, IMPLAN multipliers reflect industry linkages in a local economy at a given time. Does not account for price elasticities, changes in consumer or industry behavior based on a direct effect, etc.• Cost – Slightly more expensive than RIMS-II (\$350 for a county; \$640 for a state; additional packages available as well) although much less expensive than REMI• Time – As with RIMS-II, total economic impacts are presented; time required for that impact to be realized (for all ripple effects to complete) is unspecified.

Year Developed: 1980
Owner: Private (REMI)
Type of Model: Hybrid of input-output and econometric

Advantages of REMI	Limitations of REMI
<ul style="list-style-type: none">• Dynamic - A dynamic general equilibrium model with multiple feedback loops, which can forecast into the future.• Complexity - Combines the functions of an input-output model with additional equations that describe relationships between multiple economic variables such as employment, prices, and income.• Time – REMI estimates the economic impacts that would occur each year over the analysis period.	<ul style="list-style-type: none">• Cost – Expensive (\$17,000 for single geography model using 3-digit NAICS data)• Complexity – While any REMI model can be stripped back so that it functions as a more basic input-output model (similar to RIMS or IMPLAN), the complexity of the model amounts to overkill for most non-academic and non-policy oriented analyses.• Transparency – The complexity of the model makes it more difficult to explain the modeling process and outline basic assumptions.

- RIMS-II and IMPLAN are well suited for EB-5 analyses (as well as other project-specific analyses)
 - ✓ IMPLAN can also be used to analyze economic impact of policy changes, but is somewhat constrained by its “static” nature.
 - ✓ IMPLAN advantages in context of EB-5: Can be created with more geographic specificity (region can be defined with subsets of counties); Models can be modified by user to include new industries or make generic industry built into the model function more like the specific business enterprise being analyzed.
 - ✓ RIMS-II advantage in context of EB-5: Easier to “show your work.”
 - ✓ While multipliers under both RIMS-II and IMPLAN are generally similar, there is evidence of slightly higher RIMS-II multipliers for certain industry sectors
- REMI is well suited for evaluating actions/initiatives that would change market dynamics and consumer behaviors. REMI offers a number of tailored modeling products including:
 - ✓ PI+ for evaluating the total regional effect of any given policy initiative.
 - ✓ TransSight for evaluating the economic effects of changes to transportation systems.
 - ✓ Tax PI for evaluating the fiscal and economic effects of tax policy changes.

- RIMS user guide:
https://www.bea.gov/regional/pdf/rims/RIMSII_User_Guide.pdf
- IMPLAN web site:
<http://implan.com/V4/Index.php>
- REMI web site: <http://www.remi.com/the-remi-model>
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