REMI

what does **REMI** *say?*[sm]

Regional Economic Models, Inc.

At REMI, we are inspired by a single goal: to inform and improve the quality of public policy decisions. That's why we are dedicated to understanding how government actions and other changes affect the world around us. Our belief is that improved knowledge and information will lead to better decisions. We work to develop and support the use of economic models that inform government and corporate decisions.

REMI was founded in 1980 on the transformative idea that government decision makers should test the economic effects of their policies before they are implemented. Our commitment to a better understanding of the economy drives our unceasing process of innovation in economic theory and practice, software development and application, and the use of quantitative economic analysis to guide policy decisions.

We are proud of the pioneering work of our clients, and their ongoing contributions to informing and guiding the policy-making process. In environmental agencies, economists use REMI models to develop policies that maintain economic growth while improving air quality. With REMI TranSight®, analysts have demonstrated the economic viability of numerous highway, port, and rail projects. When states reform their tax systems, they turn to REMI to understand how business activity can be encouraged while continuing to fund public services. Economic development organizations use REMI models to guide job creation and prioritize the allocation of tax incentives.

Our dedication as an organization maintains our position as the provider of the world's leading regional policy analysis models. We invite you to find out more about our products and services. Please join us in a common goal of improving policy decisions.

Frederick Treyz, Ph.D

Frederick Treyz, Ph.D.
President and CEO

History

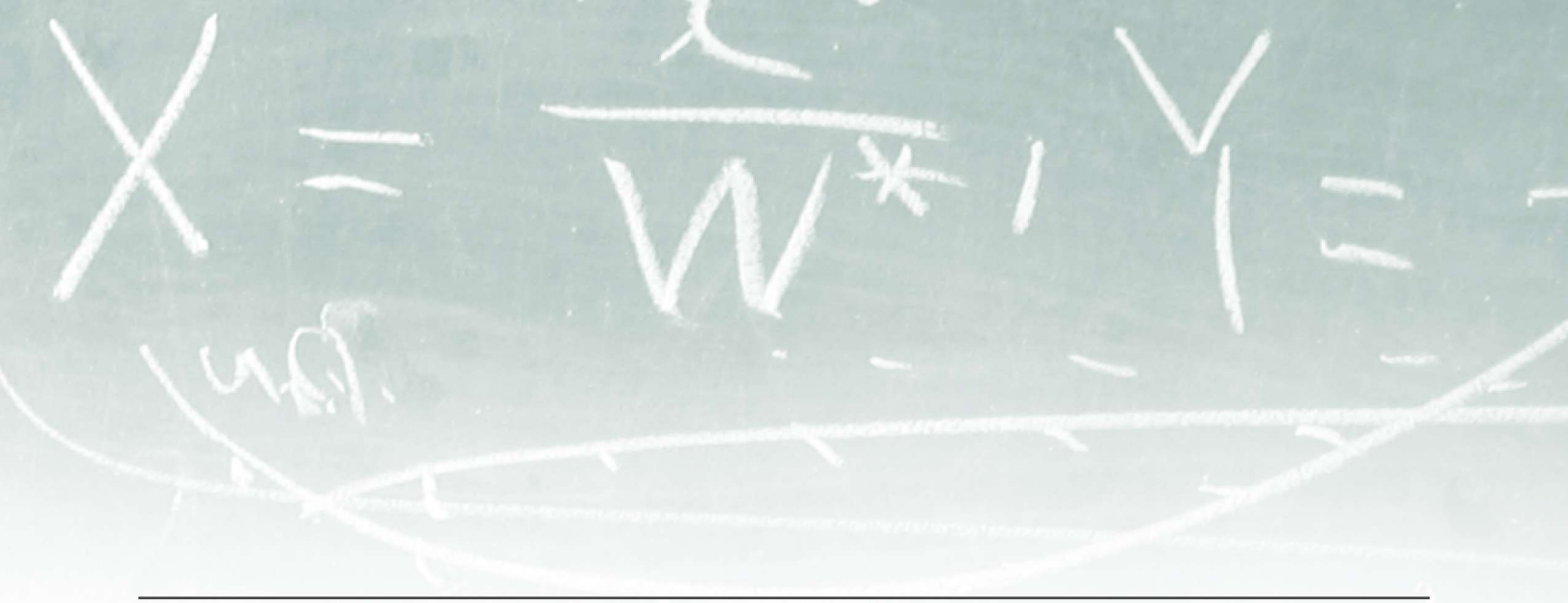
1977–1984 Origins and Getting Started

In the 1970's, Dr. George Treyz, the founder of Regional Economic Models, Inc. (REMI), works with Nobel Prize-winner Laurence Klein and other pioneers in the field of econometric modeling. Treyz, along with Ann Friedlander and Benjamin Stevens, develops the Massachusetts Economic Policy Analysis (MEPA) model, one of the first regional macroeconomic models. The Treyz, Friedlander, Stevens methodology is expanded and generalized under a National Cooperative Highway Research Program grant, becoming the basis for REMI's future models.

REMI is founded in 1980 for the purpose of developing regional forecasting and policy analysis models to inform and improve the quality of public policy decisions. The Port Authority of New York and New Jersey, the University of Colorado, and the State of Minnesota are among the first clients.

1985–1993 Working Out the Details

A series of major economic research projects expand the core REMI model into a more comprehensive representation of the regional economy. REMI publishes seminal papers on its model in the *American Economic Review,* the *Review of Economics and Statistics,* and the *Journal of Regional Science*. Regional Economics Models, Inc. experiences a major expansion of its client base and the REMI model becomes the *de facto* standard for economic policy analysis modeling.



1994–1999 Policy Insight® and New Developments

Frederick Treyz joins REMI after studying under international leaders in regional economics and modeling at Princeton University and the University of Pennsylvania. In 1994, REMI develops the first multi-regional United States model consisting of the fifty states and District of Columbia. REMI implements new data suppression procedures, consumption equations, and participation rate equations during this time. In 1997, REMI releases Policy Insight, advancing regional modeling with an intuitive graphical user interface.

2000–present Geographical Expansion

Wei Fan, Frederick Treyz and George Treyz publish "An Evolutionary New Economic Geography Model" in the *Journal of Regional Science*. This theory is implemented in the REMI model, the first use of New Economic Geography theory in a regional policy analysis model. REMI develops models internationally. Early models are built for British Columbia, Tuscany, and the Netherlands. REMI introduces TranSight®, the first widely available model that integrates travel demand models with a regional macroeconomic model.

Topic Areas

Evaluation of the effects of E.U. Structural Fund investments in Spain and Southern Italy

Effect of federal R&D spending on the state of Massachusetts

Evaluation of the effects of a new auto plant conducted separately for Michigan, Kentucky, Wisconsin, and Illinois

Analysis of the Fort Drum military facility expansion in northern New York state

Analysis of new port development in Maine

Impact of a new shopping and entertainment complex in Minnesota

Effect of a new paper mill in Wisconsin

Effect of the Kansas City Royals and Kansas City Chiefs on the metropolitan area and the state of Missouri

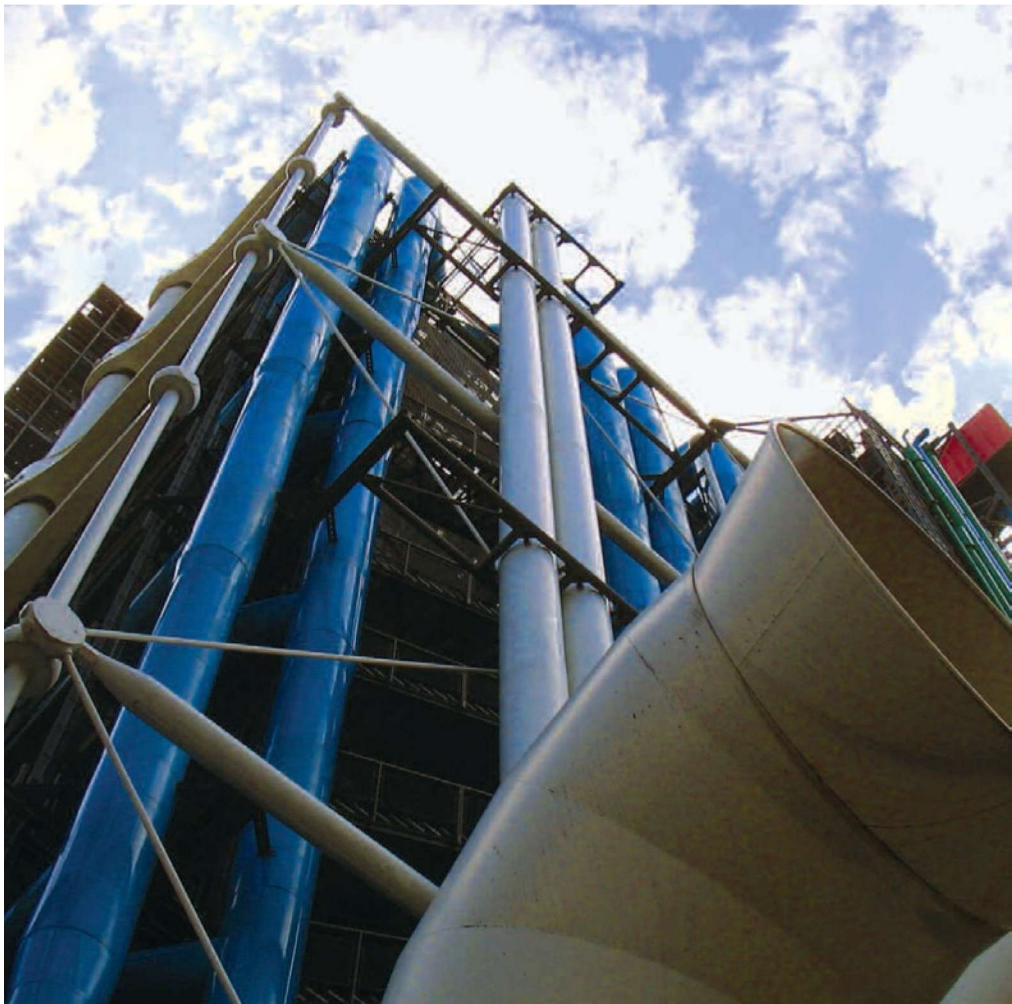
Impact of a potential paper industry contraction in New Hampshire

Economic impact of the Oklahoma Agriculture Enhancement & Diversification Program

Economic Development

When regions, states, and cities want to foster economic development, they turn to REMI for answers. Our products help to answer such questions as: Which projects warrant tax incentives? How can key clusters be encouraged? What can we expect by attracting a new firm?

REMI's BizDev® application allows users to develop sophisticated economic development scenarios that reflect the specific nature of an industry or projects, while facilitating adjustments to employee compensation, firm productivity, and the composition of the supply chain.



Environment

Environmental policies are designed for purposes such as reducing emissions, controlling water pollution, and limiting greenhouse gasses. Although the primary purpose of these regulations is generally non-economic, they often have a significant influence on economic activity. Keeping that in mind, government agencies and private businesses use REMI models to understand the economic impact of environmental policies, and to design rules that improve the environment while maintaining a healthy economy.

Impact of environmental air quality regulations in Illinois and southern California

Economic effects of adopting a low emission vehicle program in Maryland

Effect of new offshore drilling on three counties in California

Minnesota's value-added recycling manufacturing industries: an economic and environmental profile

Impact of enforcement of chemical pollution control laws on substate areas in Illinois

Economics of Everglades restoration

Exploring emission control strategies in Florida's electric utility industry

Economic impact analysis of tourism and air pollution in Florida

---

Energy

Energy powers our economy. Electricity keeps our machines humming; gas and oil drive our vehicles and fly our airplanes; and many sources of BTU's heat and cool our homes, schools, offices, and factories.

Energy-generating industries are an important input to other industries as well as a sector in their own right. Energy analyses therefore often focus on the total economic impact of changing electric rates, introducing new power sources, and investing in the production of energy.

Impacts of electric utility deregulation examined for Wyoming, Connecticut, and New York

Effect of water rate changes for Denver and other areas in Colorado

Evaluation of proposed energy price changes from conservation and construction programs for state energy offices, regulators, and utilities by linkage to the Energy 2020 model

Analysis of clear cutting referendum in Maine

Transportation

Location is as critical in economics as in real estate. Vast differences in economic activity can occur from one place to another, whether it's five thousand miles away or the next block over.

Transportation connects locations, allowing movement of people and shipments of freight. Since transportation and commuter costs are distinct types of costs, they require a methodology specifically designed for this purpose.

REMI models have been used for over 25 years to evaluate the economic implications of transportation projects. Transportation analysts use TranSight to evaluate state transportation plans, new and expanded highway corridors, toll roads, airports, seaports, rail, freight and multi-modal developments.

Evaluation of the economic effects of various alternatives for improving a major road in Wisconsin and highway alternatives in southwest Indiana

Analysis of the economic effects of Boston's Central Artery/Tunnel project

Economic impacts of alternative futures for the Los Angeles International Airport

Economic impact of a Pacific Northwest port shutdown

Economic implications of congestion

Taxation, Forecasting, and Planning

Analysts use REMI models to evaluate the effect of any policy change or event to the economy, including immigration, homeland security, base realignment, and casino development, among others.

Tax analysts value the dynamic behavioral responses built into the REMI model. Incorporating variables representing the entire range of potential taxes, REMI models demonstrate how firms, individuals, and the economy at large respond to changes in taxes.

Forecasters and planners use the economic forecasts to predict economic and demographic changes far into the future. Users develop alternative forecasts within the models, providing different potential projections for the regional economy.

Effect of tax changes in separate studies for Colorado, Wisconsin, and New York

Effect of changes in Minnesota welfare policy

Impacts arising from retirement age and social security issues

Long-term population forecasts for water resource planning in southern Nevada

Identification and analysis of trends in Michigan's export base

Overview of the REMI Model Methodology

The REMI model is a dynamic forecasting and policy analysis tool that can be variously referred to as an econometric model, an input-output model, or a dynamic structural model. In fact, REMI integrates several modeling approaches, incorporating the strengths of each methodology while overcoming its limitations. The result is a comprehensive model that answers "what if…?" questions about your economy.

Detailed Industry Sectors

REMI models contain detailed industries. At its core, the REMI model incorporates the complete inter-industry relationships found in input-output models.

Dynamic Responses

REMI models are dynamic; they demonstrate economic changes over time, allowing firms and individuals to change their behavior in response to changing economic conditions. These responses are based in part on general equilibrium economic theory.

Econometrics

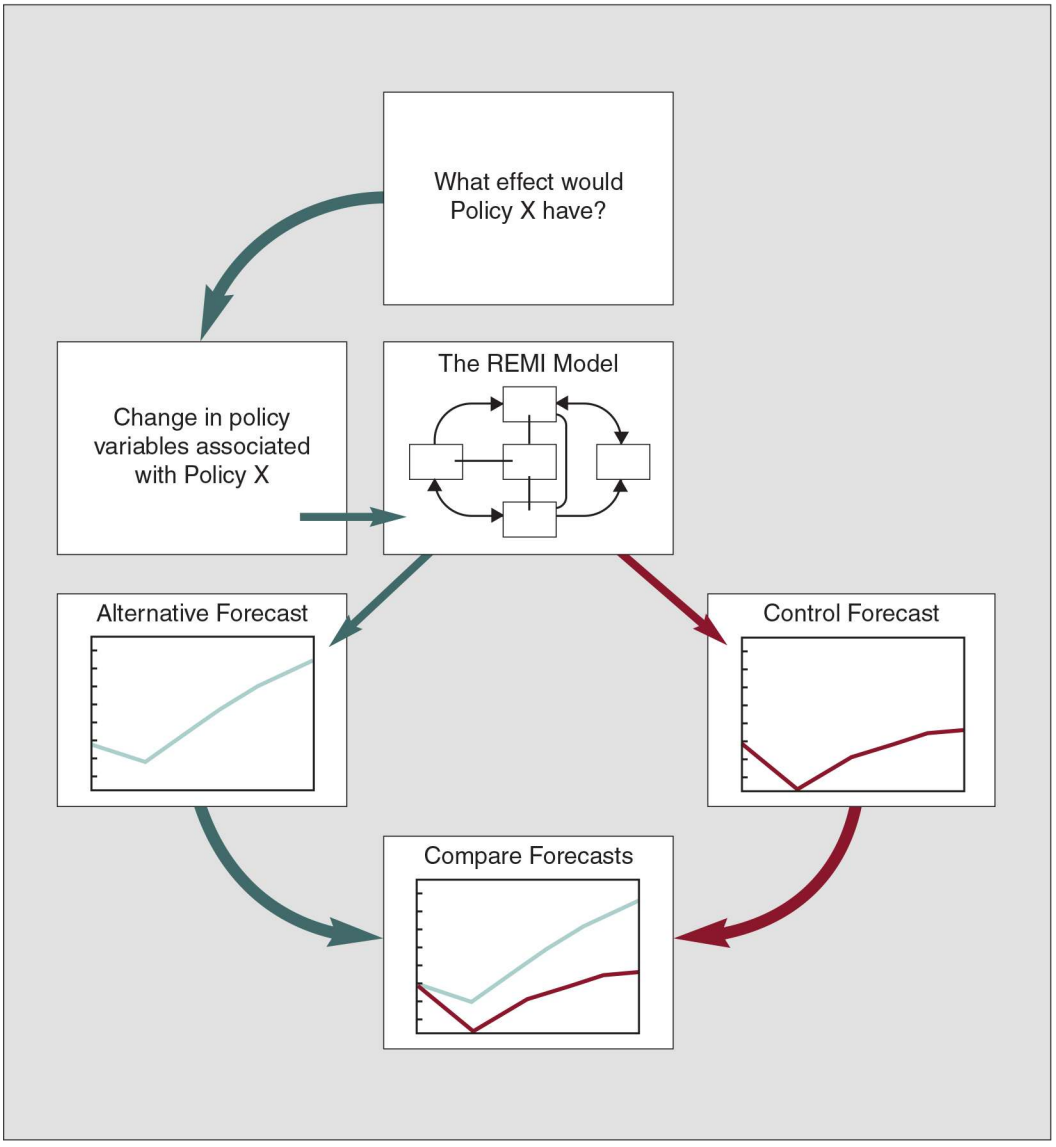
REMI models are sometimes referred to as "econometric models," due to the underlying equations and response estimations using advanced statistical techniques.

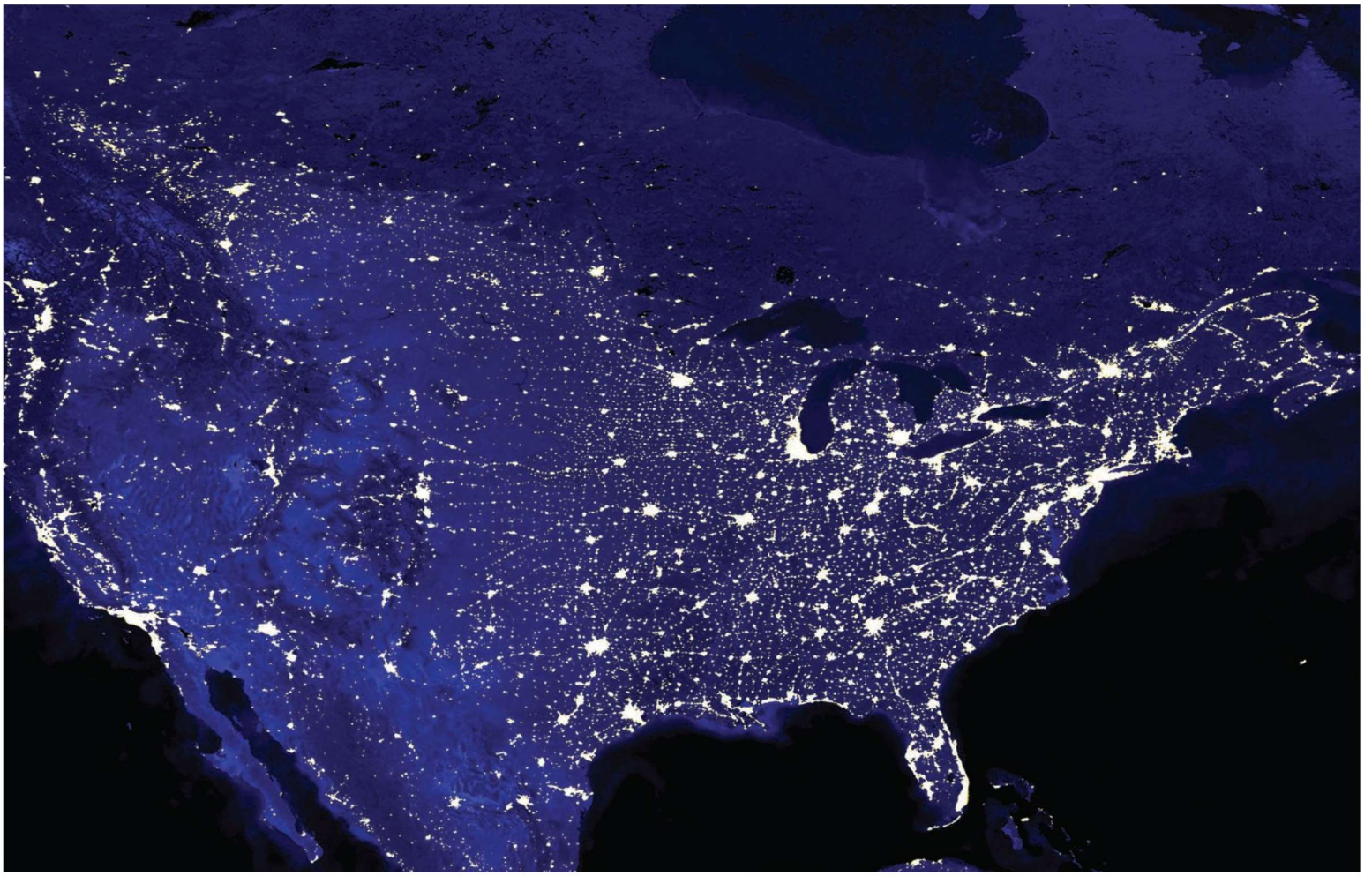
Industry Clusters and Agglomeration Economies

The spatial dimension of the economy is represented by the underlying "New Economic Geography" structure of the REMI model. This incorporates the productivity and competitiveness benefits due to the concentration, or agglomeration, of economic activity in cities and metropolitan areas, and to the clustering of industries.

How the REMI Model is Used to Answer a Policy Question

A model run accomplishes two things: it forecasts the future of a regional economy, and it predicts the effects on that same economy when the user implements a change. The first forecast is called a control forecast. The second, which incorporates the policy changes, is called the alternative forecast or the simulation. The difference between the two represents the effect of the policy as illustrated below.

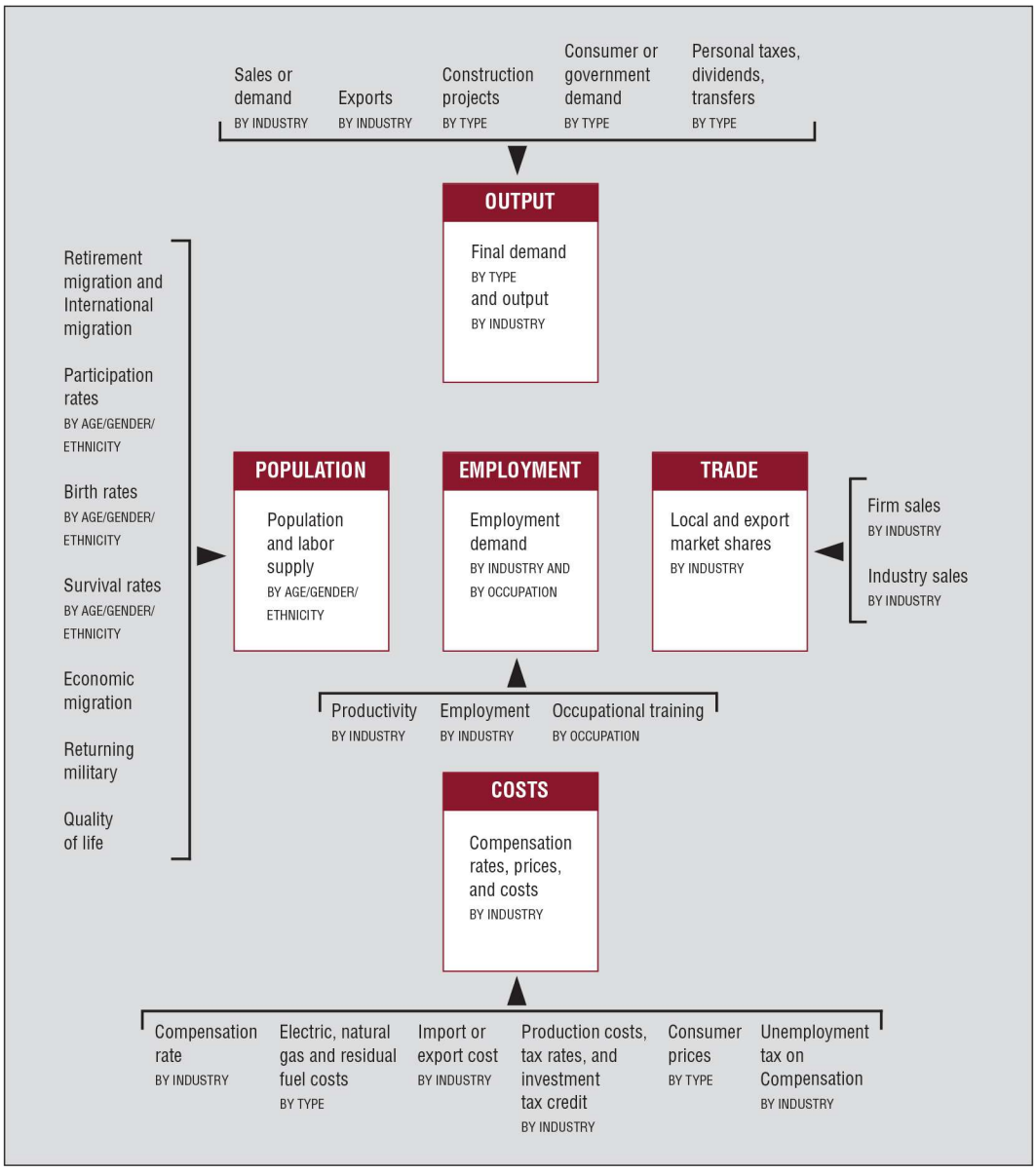




How Policy Variables Enter the REMI Model

After formulating a policy question—for example, "What would be the effects of decreasing electric rates for businesses by 50 percent?"—the user enters the policy change by adjusting any one of the thousands of policy variables in the model. Each policy variable category may be implemented at various levels of detail.

Policy variables can be changed to represent almost any direct change that may occur due to an external event or policy change. In economic studies, the user might typically change a number of variables. Policy variables range from changes in immigration to changes in housing prices.



PI+

Designed to inspire your passion for policy, PI+ is the next generation of the Policy Insight® model.

The design is simple and elegant, giving you absolute control over the most comprehensive computerized representation of the economy.

Our team of software engineers is single-mindedly focused on quality. Every aspect of PI+ is created for the purpose of improving economic analysis. By incorporating sophisticated modeling capabilities into a streamlined system, PI+ allows you to fully concentrate your attention on evaluating key economic considerations.

The model provides you with serious number-crunching capabilities. You can simulate the effects of any aspect of the economy, calculating changes to thousands of output variables in seconds.

The elegance of the economics and the intelligence of the design enables you to predict the effects of policy changes…before they happen.

TranSight

You need high performance in the virtual world of simulation modeling to spur on high performance in your highway network.

TranSight is the dynamic economic engine in best practices transportation modeling systems.

Integrating economics with travel demand modeling, TranSight dynamically demonstrates how transportation makes economies competitive. With TranSight, you can test alternative transportation changes and observe the short, and long-term impact on jobs, income, population, and other economic variables.

TranSight drives home a single message: transportation is the locomotive of economic growth. By showing the effects of transportation improvement on jobs and economic development, TranSight gives you a voice in setting legislative priorities.

TranSight is a highly complex modeling tool that integrates travel demand models with the REMI model, and is constructed with extensive data on emissions, safety valuation factors, and other data.

TranSight is grounded in the “New Economic Geography” theory as put forth by Fan, Treyz, and Treyz (*Journal of Regional Science*, Vol. 40, No. 4). The proprietary REMI transportation cost matrix translates changes in vehicle miles travelled to changes in labor access, intermediate input access, and delivered prices. These factors change economic competitiveness and drive economic growth.

REMI Metro-PI generates realistic year-by-year estimates of demographic and economic indicators for a variety of sub-county geographies. Driven by a structural economic model and calibrated to a specific region, Metro-PI brings accuracy and clarity to issues of development and urbanization. Users can analyze the localized effects of economic demographic growth throughout a particular region and assess the impacts of housing demand.

Employment Trends

Metro-PI provides forecasts for employment, population, income, and other critical variables at the sub-county level. This highlights areas of low employment, which can be monitored for improvement during alternative scenario analysis.

Population and Housing Growth

Metro-PI understands the dynamics of population growth related to natural growth and economic conditions. Housing demand responds to changing populations and their preferences to locate in each small area. This helps estimate the dynamic growth of each small area.

Transportation Patterns

Metro-PI contains a commuter flow equation which prioritizes development where transportation costs are low. By adjusting transportation patterns, users can simulate a change in the network and analyze its impact on the regions.

Mapping Results

Metro-PI includes a map component which displays forecast results in a fully-customizable layout, allowing forecast results to be assessed at a glance. Each forecast year produces different map results, which can be animated to clearly demonstrate trends in population and employment location.

REMI Tax-PI

Regional Economic Models, Inc. introduces Tax-PI, a new tool for evaluating the total fiscal and economic effects of tax policy changes. Tax-PI is based on over 30 years of experience in modeling the economic effects of tax policy changes. As states begin to demand better methods for estimating the economic and fiscal impacts of alternative tax scenarios, they look to experts to respond with sophisticated, flexible and relevant tools that can meet their needs.

Tax-PI is a ready-to-use, dynamic fiscal and economic impact model that captures the direct, indirect and induced fiscal and economic effects of taxation and other policy changes over multiple years (up to 2060).

Tax-PI is a valuable tool for modeling the complete dynamic economic and demographic impacts of any manner of tax policy change. States need to thoroughly evaluate both the short and long-term effects of any tax changes in order to best serve the needs of the people. Tax-PI allows state agencies to do this with a model backed by years of dependability and experience.

Budget Editor

Customizable table that users calibrate to reflect actual or projected revenue and expenditure details for the current, past or future fiscal years.

Taxes

Dynamic capability to adjust state specific tax revenues. Users assign tax-specific variables to each of the custom revenue categories in order to track the fiscal effects of policy changes along with the economic effects. An automated feedback mechanism feeds revenue impacts back into the model to account for price and disposable income changes, therefore adjusting government spending accordingly.

Expenditures

A customized state government expenditure module allows the user to calibrate to state-level expenditure details for current, past, or future fiscal years.

Consulting Areas

The REMI name is recognized for quality, accuracy, and integrity. When you need economic impact studies of the highest caliber, turn to REMI's Consulting Services. Answering "what if…?" questions about regional policy changes is our core competency. With over a quarter century of responding to thousands of policy scenario questions, REMI is uniquely qualified to support clients undertaking studies or to undertake complete economic impact studies.

Energy and Utilities

Since the utility and broader energy sector are highly regulated, accurate economic analysis is vital in informing public policy. Utility and other regulators trust the credibility of REMI studies, and private companies know that REMI provides the answers they need.

REMI projects range from studies on the effects of rate changes to economic development impacts of utilities and energy-related industries.

Economic Development

REMI is known for the integrity of its analysis. As policy makers and the public are often skeptical about economic impact claims, you need credible analysis to demonstrate the effects of your project. State and local stakeholders need to understand how a new development may add to income, output, and employment in their economy.

REMI has conducted numerous economic development analyses for public and private clients. Studies include impacts of military base realignments and closures, the bio-diesel industry in New York, life sciences plants in California, a major mixed-use entertainment and housing project in Pennsylvania, and others.

Transportation

The public expects that the tax dollars spent on transportation projects leads to more jobs, better jobs, and improved industry competitiveness. Transportation agencies turn to REMI for its proven expertise in developing accurate, rigorous studies showing the economic development impacts of transportation. REMI studies range from toll roads to major highway improvements, from airport impacts to transit-oriented development.

Environment

Efforts to protect the environment may have wide-reaching economic consequences. REMI is known for expertise in demonstrating the total macroeconomic effects of environmental policies. Studies include analysis of feebates, renewable portfolio standards, and cap-and-trade policies.

Taxation

Tax changes may have a significant effect on economic activity. REMI is recognized for unbiased analysis of the economic implications of tax changes. Studies include work for both the private and public sectors, in evaluating single tax changes or an overall tax reform package.

Clients

Universities

Universities value REMI models for their academic rigor and capability to perform analysis to cover a wide range of issues of concern to regional economies. Our models are widely used by public and private institutions, including major research universities, state colleges, and locally focused schools to conduct studies on the schools behalf, as well as on the behalf of others.

Consulting Firms

Consulting firms depend on REMI to deliver models that represent the highest standard of performance and quality. With the additional assistance of our unlimited client technical support, consultants can ensure that projects are completed in a timely fashion, incorporating the best understanding of how the economy works.

Federal Government

Federal agencies require the best tools to understand the implications of wide-ranging homeland security, environmental, energy, and other policies. In particular, the REMI multi-regional U.S. models, which encompass all states summing to the U.S. total, demonstrates policy effects on both the state and national economy.

State Government

State agencies lead in the implementation of policies that have a sub-national focus. As such, states rely on REMI for its widely-recognized reputation and accurate, unbiased representation of the economy. States use REMI models for all application areas, including economic development, transportation, taxation, planning, energy and the environment. In many cases, a number of agencies in a single state government use the same REMI model as a common platform for economic policy analysis.

Regional Government

Regional governments and organizations include regional planning commissions, metropolitan planning organizations, air quality management districts, water districts, and other entities. They use REMI models for purposes relating to their mission, including long-range planning, transportation analysis, environmental quality, and other issues.

City Government

City governments use REMI models to focus on bringing in emerging industries into a specified region. City agencies use our models to study infrastructure improvement and building, economic development, energy efficiency, taxation, and public policy. TranSight is used to forecast data on transportation concerns such as fuel efficiency, safety, and fuel demand, and can forecast transportation costs for future years.

Key Articles

"The Evaluation of Programs Aimed at Local and Regional Development: Methodology and Twenty Years' Experience Using REMI Policy Insight." Frederick Treyz and George Treyz. Evaluating Local Economic and Employment Development: How to Assess What Works Among Programmes and Policies. OECD, Paris. 2004. 151-190.

"An Evolutionary New Economic Geography Model." Wei Fan, Frederick Treyz, and George Treyz. *Journal of Regional* Science. 2000.

"Monopolistic Competition Estimates of Interregional Trade Flows in Services." Jim Bumgardner and Frederick Treyz. Regional Cohesion and Competition in the Age of Globalization. Ed. Hirotada Kohno, Peter Nijkamp, and Jacques Poot. Northampton MA: Edward Elgar. 2000.

"Production and Accessibility: Bridging Project-Specific and Macroeconomic Analyses of Transportation Investments." Frederick Treyz and Glen Weisbrod. *Journal of Transportation and Statistics* 1.3: 65-79; 1998.

"The REMI Multiregional U.S. Policy Analysis Model," Frederick Treyz and George Treyz. 1997.

"Regional Labor Force Participation Rates," George Treyz, C.G. Christopher, and C. Lou. 1996.

"Consumption Equations for a Multiregional Forecasting and Policy Analysis Model," George Treyz and Lisa Petraglia. 1996.

Regional Economic Modeling: A Systematic Approach to Economic Forecasting and Policy Analysis, Norwell: Kluwer Academic Publishers. George Treyz. 1993.

"The Dynamics of U.S. Internal Migration," The Review of Economics and Statistics. George Treyz, M.J. Greenwood, G.L. Hunt, and D.S. Rickman. 1993.

"Policy Analysis Applications of REMI Economic Forecasting and Simulation Models," *International Journal of Public Administration*. George Treyz. 1993.

"Multiregional Stock Adjustment Equations of Residential and Nonresidential Investment," *Journal of Regional Science*. George Treyz, D.S. Rickman, and G. Shao. 1993.

"Building U.S. National and Regional Forecasting and Simulation Models," *Economics Systems Research*. George Treyz and G. Shao. 1993.

"Alternative Labor Market Closures in a Regional Forecasting and Simulation Model," *Growth and Change*. George Treyz and D.S. Rickman. 1993.

"The REMI Economic-Demographic Forecasting and Simulation Model," *International Regional Science Review*. George Treyz, D.S. Rickman, and G. Shao. 1992.

"Estimating the Economic and Demographic Effects of an Air Quality Management Plan: The Case of Southern California," *Environment and Planning* A. George Treyz and S. Lieu. 1992.

"Migration, Regional Equilibrium, and the Estimation of Compensating Differentials," *American Economic Review.* George Treyz, M.J. Greenwood, G.L. Hunt, and D.S. Rickman. 1991.

Service Options

Depending upon your individual needs, users may purchase or rent a model to be customized for specific regions. If you prefer, REMI's consultants can carry out policy studies for you.

Temporary license (rental)

Unlimited model use for a specific time period.

Perpetual license (purchase)

Unlimited model use in perpetuity. Programs and complete documentation are provided for operating the model on your own Windows-based computer.

Maintenance

Ongoing development, updating, support, and shared research are available to those who purchase models. This includes unlimited model support as well as model improvements and updates.

Conferences and Seminars

REMI offers an annual Users' Conference and periodic on-site seminars and on-line seminars.

Consulting

Economic analysis, reports, and expert testimony.

Contact us

We invite you to evaluate our research and models. For further information about REMI models and services, please contact our office or visit our website at www.remi.com. We are able to send you a bibliography of our publications with complete citations, model documentation, or any other information that you may need.