



Regional Economic Models, Inc.

NDTO: STEP ND 2013

An analysis of the economic impact in North Dakota from increased exports through the State Trade and Export Promotion (STEP) Grant Program through December 31, 2013

January 30, 2014

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Using
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Executive Summary

This report evaluates the economic impacts of STEP ND program through December 31, 2013. The model is based on information provided by the North Dakota Trade Office and the data generated using a customized REMI Policy Insight™ model for North Dakota. The analysis shows the change in economic activity caused by the increased exports from North Dakota. In order to show the total implications of the increase, REMI developed a Policy Insight model with detailed employment, population, personal income, and other data specific to North Dakota. Using this model, REMI generated the regional baseline forecast and then used the information provided by the new project to develop an alternative forecast that would occur in the event of increased exports. The table below shows the difference to the economy that occurs from the project.

Table 1 Summary Results

Category	Units	2013
Exports to Rest of World	Current Dollars	18,558,000
Total Employment	Individuals (Jobs)	87
Output	Current Dollars	23,711,000
Personal Income	Current Dollars	3,855,000
State Revenues	Current Dollars	6,285,000
Gross Domestic Product	Current Dollars	8,402,000

Definitions

Exports to Rest of World

The amount of local production exported out of the local region to the rest of the world.

Total Employment

Employment comprises estimates of the number of jobs, full-time plus part-time, by place of work. Full-time and part-time jobs are counted at equal weight. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are not included. The Employment variable in REMI Policy Insight uses historical data from the Bureau of Economic Analysis (BEA). Employment figures projected are the difference from baseline and should not be cumulated.

Output

Output is the amount of production, including all intermediate goods purchased as well as value added (compensation and profit). This can also be described as sales or supply. The increase in

output includes a direct increase within the manufacturing industry as well as increased output across other sectors.

Personal Income

Income received by persons from all sources. It includes income received from participation in production as well as from government and business transfer payments. It is the sum of compensation of employees (received), supplements to wages and salaries, proprietors' income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, personal income receipts on assets, and personal current transfer receipts, less contributions for government social insurance.

State Revenues

State-specific state revenue average rates are calculated by dividing the state-specific state revenues (from State and Local Government Finance Estimates, by State, U.S. Census Bureau) by an appropriate base (base data comes from the REMI historical database for each individual state). State Revenue estimates by region are calculated within the model by multiplying the state-specific state revenue rate by the appropriate local base data.

Gross Domestic Product (GDP)

GDP is the market value of goods and services produced by labor and property in the United States, regardless of nationality.

Methodology & Assumptions

REMI Policy Insight

REMI Policy Insight® is the leading regional economic-forecasting and policy-analysis model. REMI built this model using the REMI model building system, which consists of hundreds of programs developed over the last two decades. The model uses data from the Bureau of Economic Analysis, the Bureau of Labor Statistics, the Department of Energy, the Bureau of Census, and other public sources.

REMI Policy Insight is a structural model, meaning that it clearly includes cause-and-effect relationships. The model is based on two key underlying assumptions from mainstream economic theory: households maximize utility and producers maximize profits. Since these assumptions make sense to most people and the structure is transparent, lay people as well as trained economists can understand the model.

In the model, businesses produce goods to sell to other firms, consumers, investors, governments and purchasers within and outside economic regions. The output is produced using labor, capital, fuel, and intermediate inputs. The demand for labor, capital and fuel per unit of output depends on their relative costs, since an increase in the price of any one of these inputs leads to substitution away from that input to other inputs. The supply of labor in the model depends on the number of people in the population and the proportion of those people who participate in the labor force. Economic migration affects the population size. People will move into an area if the real after-tax wage rates or the likelihood of being employed increases in a region.

Supply and demand for labor in the model determines the wage rates. These wage rates, along with other prices and productivity, determine the cost and opportunity of doing business for every

industry in the model. An increase in costs would decrease the markets supplied by firms. This market share combined with the demand described above determines the amount of local output. The model has many other feedbacks. For example, changes in wages and employment impact income and consumption, while economic expansion changes investment, and population growth impacts government spending.

Figure 2-1 is a pictorial representation of REMI Policy Insight. The Output block shows a business that sells to all the sectors of final demand as well as to other industries. The Labor and Capital Demand block shows how labor and capital requirements depend both on output and their relative costs. The demographic block includes population and labor supply, contributing to demand and wage determination. Economic migrants in turn respond to wages and other labor market conditions. Supply and demand interact in the Wage, Price and Profit block. Relative production costs determine market shares. Output depends on market shares and the components of demand.

REMI Model Linkages (Excluding Economic Geography Linkages)

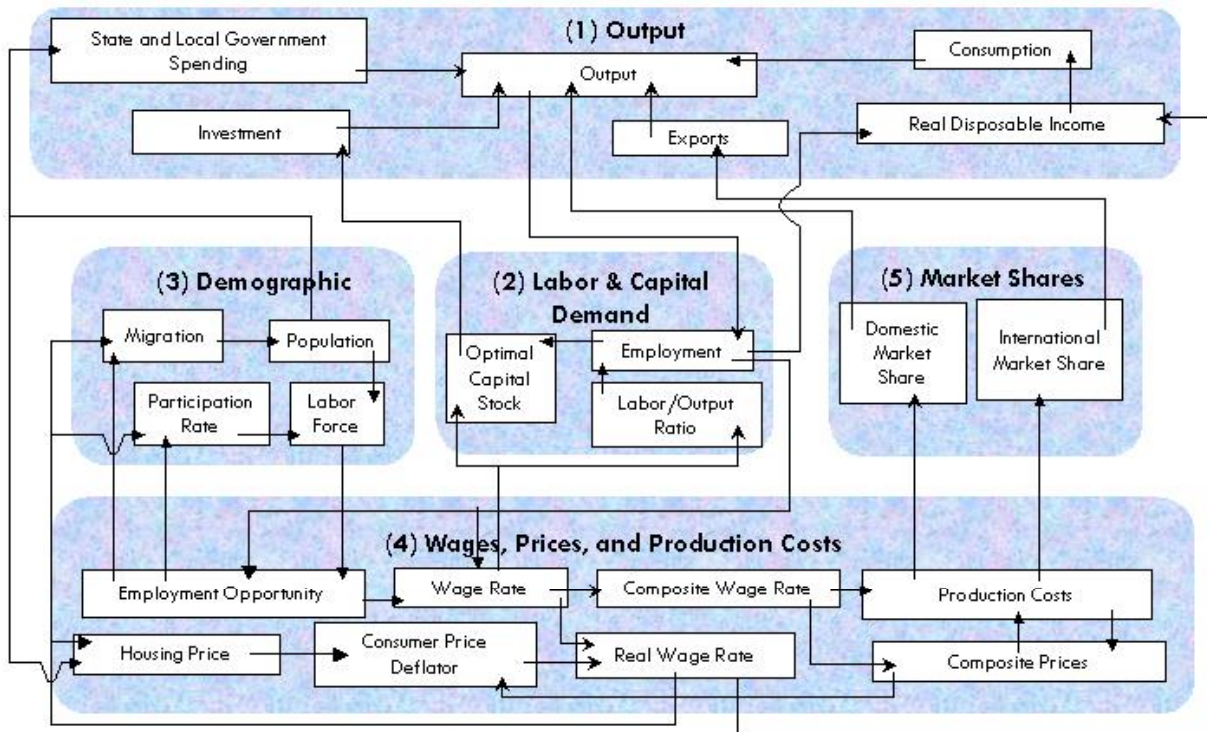


Figure 2-1 REMI Policy Insight overview

The REMI model brings together all of the above elements to determine the value of each of the variables in the model for each year in the baseline forecast, as well as for simulation purposes. The model includes all the inter-industry interactions that are included in input-output models in the Output block, but goes well beyond an input-output model by including the linkages among all of the other blocks shown in Figure 2-1.

In order to broaden the model in this way, it is necessary to estimate key relationships. This is accomplished by using extensive data sets covering all areas in the country. These large data sets and two decades of research efforts enable REMI to simultaneously maintain a theoretically sound model structure and build a model based on all the relevant data available.

The model has strong dynamic properties, which means that it forecasts not only what *will* happen but also *when* it will happen. This results in long-term predictions that have year-by-year changes. This means that the long-term properties of general equilibrium models are preserved while maintaining accurate annual predictions, using estimates of key equations from primary data sources.

All changes in population are cumulative. Population reflects mid-year estimates of people, including survivors from the previous year, births, special populations, and economic migrants.