

# Methodology of Linked Macro and Multi-Sector Models

Marcus Noland  
Sherman Robinson  
Tyler Moran

Peterson Institute for International Economics  
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# Trump Trade Policy Shocks

- The major changes in US trade policy that Trump is proposing, and that he plans to implement quickly, will represent a major “shock” to the US economy that will have macroeconomic repercussions in the short to medium run
- We want to consider the implications of these shocks from an international trade perspective, focusing on their employment impacts on traded and trade-related industries in the US
- We consider various “scenarios” reflecting different policy changes
  - “Scenarios” are not “forecasts”. They represent “what if” analysis, not predictions.
  - We consider various macro scenarios and some examples of possible industry focused retaliatory policies by affected trade partners

# From Macro Shocks to Industry Impacts



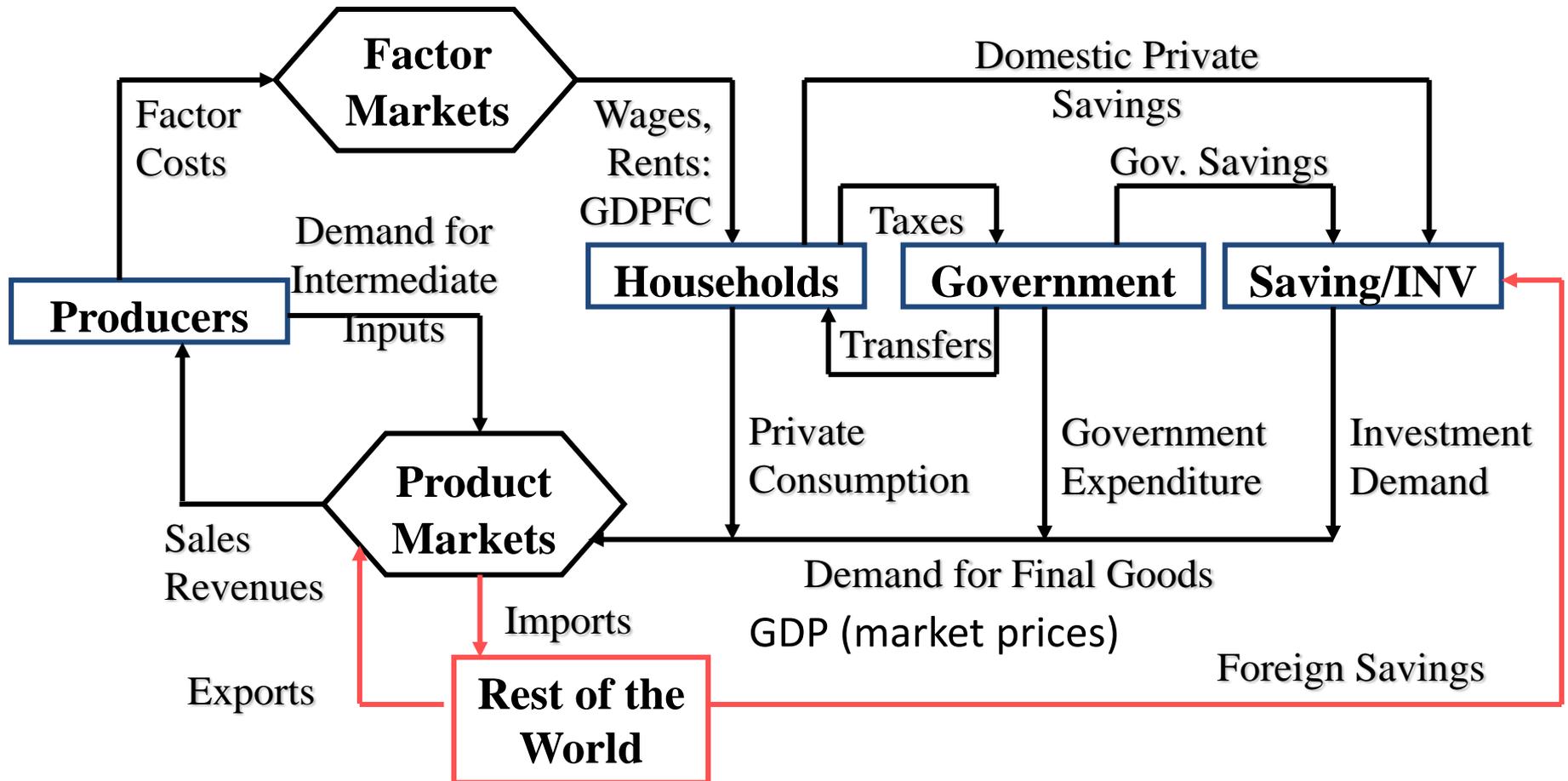
- We have followed a three step procedure:
  - A macro-econometric model to analyze the implications for macro aggregates
  - A national multi-sectoral model to disaggregate the macro effects to industries
  - A state and regional model to disaggregate the results from the national multi-sector model to impacts on employment at the state and county level
- At the macro level, models in the family of macro-econometric Keynesian models are an appropriate tool for analyzing the impact of such shocks
- We teamed with Moody's Analytics, and they provided scenario simulations with their macro-econometric model that focused on trade policy shocks
- Moving to industry level analysis requires additional steps

# Circular Flow of Production, Income, Demand



Supply side: production

Demand side: macro aggregates



# Input-Output Models



- Long tradition going back to Wassily Leontief (Nobel Prize winner)
- Focus on inter-industry links: flows of intermediate goods among industries (e.g., steel to autos, wheat to Wheaties)
- Detailed breakdown of industries (US data for 389 industries)
- Assume linear technology and fixed prices: input-output coefficients, fixed employment coefficients.
- Useful to incorporate direct and indirect demands for commodities
  - Change in demand for airplanes affects all intermediate input industries (e.g., parts)
- Used at the regional level (e.g., states, counties). IMPLAN and REMI models
- Demand driven: changes in demand lead to changes in production



# Social Accounting Matrix (SAM)

- We developed a social accounting matrix (SAM) that included the 389-industry input-output data and also separate accounts for the macro “actors”, disaggregating their demand for 389 commodities
- This data set supports a “SAM-multiplier” model that traces the impact of any change in commodity demand to resulting changes in industry production and employment—production/employment is driven by changes in demand
- SAM-multiplier models close cousins of input-output models. They extend the demand side to include explicit economic actors
- A separate model further disaggregates the change in employment at the national level to changes at the state and local levels

# Linked Macro and Input-Output Models



- We use the Moody's macro model to provide results for macro aggregates under various trade-policy scenarios
  - They provide results for aggregate consumption, investment, government, trade, and employment
- The SAM-multiplier model disaggregates changes in aggregate demand from the macro model to changes in production/employment at the national level
- A separate model further disaggregates the change in employment at the national level to changes at the state and local levels

# Macro-econometric and SAM models



- The macro-econometric and SAM-multiplier models that we are using are not “novel”—they have been part of the economics tool kit for at least 30-40 years
- There have certainly been lots of advances in both types of models, but they are workhorses of empirical economic analysis
  - Private companies are selling their services to provide analysis based on both types of models
- Our contribution is to link the two approaches, letting each model do what it does best