**Collaboration with Richard Hornbeck and Martin Rotemberg**

**Raw variables**

Firm-level, raw variables

* Revenues
* Expenditure on each input
* Total output at the country level (micro or macro?)

Firm-level, calculated/estimated variables

* Wedges: gap between marginal value of input and marginal cost (for each input). HK framework.

**New variables**

* Industry production function elasticities: calculated using cost shares 
* Weighted average of the cost shares: simple average across time of the weighted average cost share for each factor. 
* Input k’s expenditures as share of a country’s revenue. 
* Wedge: 
* Gap/Difference between marginal cost and marginal value of production is the wedge\*sc 
* Market access: 
* , where P is average price per ton of transported good
* Country/county productivity: 

**Parameters**

* Trade elasticities: estimated to be between 3 and 7. WB DEC Working Paper Series.
  + https://documents1.worldbank.org/curated/en/099524306202324085/pdf/IDU01ba09ebe0931f04f070a11c0471fc38ea0e2.pdf
* Average price per ton of transported good
  + <https://della.eu/price/local/>
  + https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099542207312319005/idu0e82b93e00034b0458f09ed203c7e2ad23763
* Transportation cost

**Main decomposition**

A group of mathematical equations

AI-generated content may be incorrect.



Ideas

* Instrument MA with distances through the Silk Road.
* Expand the specification to include digital dimension. Can we assume a simple Cobb-Douglas for physical and digital connectivity?

A close-up of a text

AI-generated content may be incorrect.

**Richard’s request**

* **A map** of the whole sample region with **thick country borders and thinner NUTS borders**
* A tabulation of the **number of NUTS within each country.**
* Within each NUTS, it also sounds like there are firm-level data.  Is that a Census or a sample?  If a sample, it’d be useful to know about the **sampling scheme** and if there’s any aggregate NUTS-level data we could use for scaling
* For each NUTS, we’d also want **total population (or workers)**
* For each NUTS, country for each NUTS (?)
* We’d want **NUTS-level revenue shares** based on the **total expenditure on that input divided by total output value**
* Depending on the **agricultural data available**, or data for other sectors, we’ll probably also need to assign some **cost-shares for agriculture** (along with a land or fixed factor share).
* For the firm-level data, I expect it includes something like:  NUTS / industry code / **output value / materials expenditures / labor expenditures / capital expenditures or capital stock**
* Variables: **total output/materials/value-added/workers/capital**
* Is that just for manufacturing firms?  If so, it’d be useful to **know something about the relative size of the manufacturing sector as opposed to agriculture** and/or services or other sectors that would make up total province output—Check KLEMS
* Most natural is if the values are at the factory-date (output does not include transportation costs and materials do include transportation costs), but **it’d be good to know how transportation costs are supposed to show up in output and inputs**
* For parameters, we can take some values of the trade elasticity (theta) from the literature-I have them
* **Transportation costs**: (1) as **measured now**, and (2) **counterfactual**--the projected transportation costs after **particular scenarios** of infrastructure construction.  So, at the NUTS level, what is the **cost associated with the lowest cost route to each other NUTS** in the sample region
* **Total value of imports/exports out of the sample** region to elsewhere, potentially along with the
* **Costs of getting from at least some NUTS along the edge of the sample region to those other main origins/destinations**.
* Weights discussion with Richar: It’s a bit different for the different measures below — the formulas are in the JPE paper. It could be easiest in some cases to sum across firms and then divide, rather than weighting. But if it’s a sample, rather than census, maybe sampling weights could be used.