



UNIVERSITY OF
MARYLAND

3114 Tydings Hall
College Park, Maryland 20742-7211
301.405.3266 TEL 301.405.3542 FAX

307386

Francis O'Connor
Acting Director, Office of Economics
Surface Transportation Board
395 E Street SW
Washington, D.C. 20423

October 26, 2023

Dear Mr. O'Connor,

ENTERED
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Public Record

Request for Access to Confidential Waybill Sample

We are applying for the unmasked confidential waybill sample to help us understand the economic and policy implications of how competition between railroads interacts with competition between power plants and competition between coal mines, and how these interactions have changed over time in response to shocks to demand and supply conditions and changes in the regulatory environment. Our objective is to produce one or more academic research papers which will be presented at academic seminars and conferences, and submitted for publication in leading economics journals. We will seek to present our results at relevant government agencies, but the waybill data will only be used for academic research.

Research Questions and Proposed Methods

Assessing the effects and the incidence of several different types of policy depends on understanding both competition within an industry and how cost and demand changes are passed through to other industries in a supply chain. For example,

- i) the effects and incidence of an environmental policy that disadvantages electricity generated by burning coal will depend not only on the scope for substituting coal with natural gas and renewables, but also on how changes in power plant costs affect the prices that plants negotiate with coal mines and with the railroads that they use to transport coal;
- ii) the effects of a merger between coal mines, and the pass-through of any cost efficiencies that such a merger may generate, will depend not only on the scope for substitution with coal from other mines, but also on the extent of substitution between fuel types in the electricity market, the bargaining leverage that power plants have when negotiating with mines, and how railroad prices will respond if coal prices change; and,
- iii) the environmental impact of a change in railroad regulation or market structure will depend on substitution and market power in both coal and electric power markets.

Our primary objective is to develop and estimate structural economic models that can be used to (a) understand changes in prices and outputs that have been observed over the last three decades, and (b) guide our understanding of the economic effects of possible future changes in market structure and regulation affecting mines, railroads, or power plants. The counterfactuals considered would include those listed as i)-

iii) above. We will also conduct descriptive and reduced-form analyses (e.g., multivariate linear regressions) to evaluate which modelling assumptions are reasonable and how far our models can explain changes in the data, and to present additional results.

An important innovation, both to the academic literature and to regulatory practice, is that we will be considering the interaction of firms in three industries rather than two. For example, Preonas (forthcoming) focuses on market power in the interaction between railroads and power plants, while ignoring the upstream interaction between railroads and coal mines.¹ In contrast, Song (2022) considers the effects of a coal mine merger allowing for substitution by power plants across mines, but holding railroad prices fixed as if railroad prices are set competitively.² Similarly, antitrust litigation of steam coal mine mergers in the U.S. has focused on possible substitution by power plants, even though transportation costs make up over 50% of the delivered price of coal, and railroads linking coal fields and power plants are more concentrated than either of the other industries.³ We plan to estimate both static models (i.e., models that ignore how firms' strategies affect future demand and supply conditions) and models that account for firms' dynamic considerations (e.g., railroads and mines may account for the possibility that high prices will cause uncompetitive power plants to close, lowering their future demand), building on innovations for modelling dynamic games in Sweeting et al. (2022) and Deng et al. (2023).⁴

We plan to not only estimate our model using recent data, but to also provide insights into what has happened to the distribution of market and bargaining power over the last 20–30 years as a result of structural changes, such as the displacement of many coal plants from baseload electricity production. In this regard, our work will fit into a growing academic literature that has looked at changes in productivity, market power and competitiveness over longer periods of time in other industries.⁵ A significant innovation will be to provide this type of analysis in the context of understanding multi-way interactions within a supply chain.

Our models will be estimated using the waybill sample and several publicly available datasets on the coal and electric generating sectors (e.g., from EIA forms 423 and 860). These datasets provide information on the delivered prices of coal to power plants (i.e., including the transportation cost), as well as data on the prices and use of alternative fuels.

We plan to apply for a National Science Foundation grant to support our research. This grant will support research assistants, computing resources, and the purchase of additional datasets such as the Centralized Station Master List.

Requested Waybill Sample

We request the full unmasked confidential waybill sample from 1984 to the present (i.e., all observations). While we will focus on shipments of coal, we plan to use data on shipments of other commodities to (i)

¹ Preonas, Louis, “Market Power in Coal Shipping and Implications for U.S. Climate Policy”, Review of Economic Studies, forthcoming.

² Song, Yichun, “Bargaining, Merger, Capacities and Endogenous Network Formation: The Case of Power Plants and Coal Suppliers in the US”, 2022, Ohio State University working paper.

³ For example, FTC Administrative Complaint against Peabody/Arch Coal joint venture (Feb 26, 2020) ([complaint](#)).

⁴ Sweeting, Andrew, Dun Jia, Shen Hui and Xinlu Yao, “Dynamic Price Competition, Learning-By-Doing and Strategic Buyers”, American Economic Review, 2022, 112(4), 1311–33. Deng, Shanglyu, Dun Jia, Mario Leccese and Andrew Sweeting (2023), “Bargaining and Dynamic Competition”, University of Maryland working paper.

⁵ Examples of recent studies with a longer-run perspective include Grieco, Paul, Charles Murry, Ali Yurukoglu, “The Evolution of Market Power in the U.S. Automobile Industry”, Quarterly Journal of Economics, forthcoming, and De Loecker, Jan, Jan Eeckhout and Gabriel Unger, “The Rise of Market Power and the Macroeconomic Implications,” Quarterly Journal of Economics, 2020, 135 (2), 561–644.

account for railroad network congestion, and (ii) investigate alternative controls for changes in shipping rates that reflect the evolution of railroad costs, independent of any changes in leverage between railroads, mines, and power plants.

Using this sample, we anticipate estimating our models using all variables that identify the load being transported; shipping rates, including flags that identify the nature of the contract; rail carriers; and the origin, destination, and routing of the sampled shipment. We will also make use of the STB cost estimates and sampling-related expansion weights. Below, we have attached a list of the variables in the waybill sample that we anticipate that we do not need. However, if excluding these variables (which we do not believe contain sensitive information) is administratively burdensome, then we would also be happy to receive the complete dataset (i.e., all variables in the unmasked sample).

Our Need for Unmasked Confidential Waybill Sample

The unmasked confidential waybill sample is a necessary component of our empirical analysis because it:

- a) identifies the reporting railroad carrier, which is essential for modeling firm interactions;
- b) provides geographic information to help us identify the originating coal source and destination power plant, after merging with FSAC geographic information from the Centralized Station Master File (although we recognize the confidentiality that comes with shipper information, see below);
- c) contains the calculated rate flag, which will allow us to identify which shipments are under tariff and non-tariff movements and allow us to interpret the freight revenue field correctly. This is very important for the type of questions that we will study, as otherwise it is possible that we will interpret changes in masked revenues as reflecting changes in rail rates that do not occur in reality⁶;
- d) contains the STB's estimates of variable costs, which combined with publicly available data (e.g., on rail networks, changes in wages, shipping distances, routes, interchanges, etc.) and observations on rate changes for shipments of other products, will help us identify how far changes in prices reflect changes in railroad costs rather than changes in market power or bargaining power or leverage.

Confidentiality Requirements

We understand that confidentiality/disclosure restrictions that access to the confidential waybill sample implies (e.g., the three-shipper and three-FSAC rules).

We will only report our primary results in the form of model estimates and model predictions which will not allow a reader to “backwards engineer” waybill sample data. We will only report our counterfactual results in ways that are aggregated to prevent inferences about particular shippers (following the three-FSAC rule). For example, we may report statistics based on all coal fired power plants within a broad

⁶ The rate information will be specifically useful in letting us avoid assumptions made in the previous literature. For example, Preonas (forthcoming) assumes that differences in the delivered prices of coal across power plants that face different degrees of railroad competition for their coal-shipping business reflects the market power of railroads, because coal mines are assumed to be competitive. With information on prices from the waybill sample we would be able to assess whether this assumption is correct, or whether the market power of railroads also affects the prices received by mines. The STB's Waybill Reference Guide notes the interpretation problems created when using reported revenues as if they always reflect real prices (e.g., 2016 Reference Guide, p. 186).

geography (e.g., the ERCOT or MISO market areas). For non-coal commodities, we will only report statistics that are aggregated across commodities (as well as shippers) so no disclosure issues should arise.

We will share slides and working papers with the STB's Office of Economics well in advance of when we plan to circulate them publicly, so that the STB can verify that our reporting complies with the disclosure rules. We will inform journals of the confidential nature of our data at the time of submission. While we expect to make our computer code that processes the data publicly available post-publication, as is now standard practice in economics, the data itself will not be revealed.

Researchers

Principal Investigators:

Louis Preonas: Assistant Professor in the Agricultural and Resource Economics Department at the University of Maryland, College Park.

Andrew Sweeting: Professor of Economics in the Department of Economics at the University of Maryland, College Park.

Graduate Students assisting in the project who will require access to the data and are likely coauthors:

Qian Wang: 4th year PhD student in the Department of Economics at the University of Maryland, College Park. PI Sweeting is the Wang's main advisor.

Jingyi Xing: 2nd year PhD student in the Department of Economics at the University of Maryland, College Park. PI Sweeting is the Xing's main advisor.

Yours faithfully,



Andrew Sweeting
Professor
Department of Economics
3114 Tydings Hall
University of Maryland
College Park, MD 20742
Email: atsweet@umd.edu
Tel: 301 405 8325



Louis Preonas
Assistant Professor
Department of Agricultural and Resource Economics
2200B Symons Hall
University of Maryland
College Park, MD 20742
Email: lpreonas@umd.edu
Tel: 301 405 1293

Attachment: List of variables in the Waybill Sample that are we are not requesting

Nominal Car Capacity - Expired	Dominion of Canada Code
Outside Length	Origin Customs Flag
Outside Width	Destination Customs Flag
Outside Height	Origin Grain Flag
Extreme Outside Height	Destination Grain Flag
Type of Wheel Bearings and Brakes	Origin Automobile Ramp Facility Code
Number of Axles	Dest. Automobile Ramp Facility Code
Draft Gear	Origin Intermodal Flag
Number of Articulated Units	Destination Intermodal Flag
Mechanical Designation Code	Transborder Flag
Licensing State (TOFC)	Origin Railroad Country Code
Maximum Weight on Rail	First Interchange Railroad Country Code
	Second Interchange Railroad Country Code
	Third Interchange Railroad Country Code
	Fourth Interchange Railroad Country Code
	Fifth Interchange Railroad Country Code
	Sixth Interchange Railroad Country Code
	Termination Railroad Country Code