

Surface Transportation Board
Washington, D.C. 20423-0001

Office of Economics

November 20, 2023

Andrew Sweeting & Louis Preonas
Department of Economics
University of Maryland
College Park, MD 20742

Re: Waybill Request WB23-57

Dear Mr. Sweeting and Mr. Preonas:

The Surface Transportation Board (STB) has received your request under 49 C.F.R. § 1244.9(c) of October 26, 2023 for permission to access the unmasked 1984-2021 confidential Carload Waybill Sample (CCWS). Your request explained that the requested data would be used for academic research purposes. The objectives of your research are to 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 condition and changes in the regulatory environment. Your request explained that the CCWS is required to fulfill your research objectives and that the revenue data from the CCWS is needed to conduct your analysis and cannot be obtained anywhere else. Notice of your request was published in the Federal Register on November 3, 2023, and no objections were received.

Based on the complete and sufficiently detailed explanations and justifications contained in your request, you will be authorized to access the requested data. Specifically, you will have access to the full 1984-2021 unmasked waybills, minus the fields identified in your Attachment as not necessary to your research. Although, it is the Board's practice to generally limit disclosure to masked revenue data, unmasked revenues are being released because your request explains with particularity how revenue data will be used and the need to conduct your academic research with actual revenue data. This data may only be used for the academic purpose detailed in your request and may not be used for any other purpose such as private, commercial consulting. ***This approval becomes effective when signed agreements from the individuals listed below are received by the STB:***

- a) *Andrew Sweeting – Professor – University of Maryland*
- b) *Louis Preonas – Assistant Professor – University of Maryland*
- c) *Qian Wang – PhD Student – University of Maryland*
- d) *Jingyi Xing – PhD Student – University of Maryland*

The expiration date for this agreement is November 30, 2024. Unless you seek and obtain a renewal from the STB, this agreement upon expiration obligates you to return or destroy all copies of the data (see item 6 of the agreement). Any request for renewal will need to provide

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a detailed explanation for why continued access to the data is necessary and demonstrate that you are continuing to actively use the data for the originally requested purpose.

Several aspects of the CCWS limit the conclusions that may be drawn from analysis of the CCWS: 1) the CCWS is a sample, and 2) the CCWS is based on terminating shipments from relatively large carriers. Only those railroads with more than 4,500 annual terminating carloads are included in the sample. The limited sampling of small railroads may have a substantial effect on studies covering areas served predominately by non-sampled railroads. For additional information on the CCWS, see *Reference Guide* @ <https://www.stb.gov/reports-data/waybill/> on the Board's website.

The rules for release of waybill data are codified at 49 C.F.R. § 1244.9. The CCWS contains confidential shipper and railroad data. As a result, the CCWS is commercially sensitive and has the potential to cause competitive harm to shippers and railroads if disclosed. Therefore, the following agreement must be signed, and a copy of the signature pages returned to the STB, before any waybill data can be used.

Your signature acknowledges your agreement to comply with the following:

1. You will use the CCWS data released to you solely for the purpose requested.
2. Absent permission from the STB, you shall make the information contained in the CCWS (including work product and analyses derived from the CCWS) available only to the individuals identified above. The STB may approve access for additional individuals within your entity working on the particular project or study requiring the waybill data. Each such additional individual must review and sign this agreement, and return a copy of the signature page to the STB.
3. You will not release any CCWS data (including work product and analyses derived from the CCWS) to anyone who has not signed this agreement and been approved for access by the STB until the STB has had the opportunity to review the materials proposed for disclosure to ensure confidentiality.
4. You acknowledge that, in addition to the restrictions described in paragraphs 1 and 2 above, you are bound by the STB's rules governing use and disclosure of CCWS data. These include the confidentiality provisions of 49 C.F.R. §§ 1244.9(f)(1)-(3), which require that "[a]ny shipper data obtained from the Waybill Sample shall not be publicly released unless the data are aggregated to include at least three shippers." In addition, you agree not to disclose CCWS data that permits identification of an individual railroad.
5. You will refer any requests for CCWS data in your possession (including work product and analyses derived from the CCWS) to the STB for processing and will

Waybill Agreement WB23-57

inform the requesting party of such referral to the STB. If you are compelled by law or order of a governmental or judicial body to release CCWS data, you shall notify the Board in writing within three days of any determination that CCWS data must be released, and in no event later than five days before the CCWS data is scheduled to be released.

6. In order to retain access to the CCWS beyond the expiration date specified above, you must submit a written request for an annual extension of the agreement no later than thirty days prior to the expiration date and the renewal request must be approved by the Office of Economics. **If an annual agreement is not signed and approved, you must certify by no later than the expiration date that all CCWS data (including all work product and analyses derived from the CCWS) obtained under this agreement has been destroyed or returned to the STB.**
7. Failure to request an extension (if necessary), or destroy or return CCWS data when required, may prevent any future release of CCWS data to you. Violations of this agreement may subject you to sanctions by the Board.

After all parties have signed and returned this agreement, please contact Mr. Dusenberry (202) 245-0319 to make the necessary arrangements to have a copy of the data sent to you. The STB will provide the data by email through file transfer protocol. Prior payment of processing and mailing cost of **\$248 (\$62 per confidentiality agreement)** is required. Payment can be made through the Board's electronic payment system, Pay.gov. Your payment through Pay.gov will generate a unique Pay.gov transaction number, which you will need to provide with your signed agreement. Pay.gov accepts payment through bank accounts, credit cards, debit cards with a MasterCard or Visa logo, and digital wallet.

Sincerely,

Francis X. O'Connor

Francis O'Connor
Acting Director,
Office of Economics

Waybill Agreement WB23-57

I have read and understand the conditions for release of the CCWS data. I agree to comply fully with these conditions and the provisions of this confidentiality agreement. No later than thirty days before the agreement expires, I will request an extension of this agreement, if necessary. If no extension is requested, I will return or destroy all CCWS data and certify that I have done so. I have the authority to sign this agreement.

By: Andrew Sweeting

**Andrew
Sweeting**

Signature



Digitally signed by Andrew
Sweeting

Date: 2023.11.30 09:45:45 -05'00'

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By: Louis Preonas

Louis Preonas Digitally signed by Louis Preonas
Date: 2023.11.30 11:09:11 -05'00'

Signature

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By: Qian Wang

Qian Wang

Digitally signed by Qian Wang
Date: 2023.11.30 11:48:48
-05'00'

Signature

Waybill Agreement WB23-57

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By: Jingyi Xing

Jingyi Xing

Digitally signed by Jingyi
Xing
Date: 2023.11.30 12:10:24
-05'00'

Signature

*UMD-Procurement
Senior Buyer- At Procurement
Rahima Jamal
11/30/2023*



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,

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,



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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