Research Statement | Paul Le Tran[1] | October 2025

I am an applied macroeconomist studying how text analysis and natural language processing can be used to investigate the empirical effects of institutional communication, like those from central banks, on economic outcomes and expectations formation. My research is organised into two agendas. The first leverages text analysis and machine learning to advance macroeconomic measurement, using the information in source documents to extract purer signals of policy intent. The second analyses how this information shapes market expectations and macroeconomic outcomes.

1 Advancing Economic Measurement with Text as Data

A foundational challenge in empirical macroeconomics is that the objects of interest—the market's "full" reaction to news or "exogenous" policy shocks—are unobservable. My research develops novel methods that use the textual content of policy announcements to construct credible proxies for these latent variables, thereby strengthening causal identification.

My job market paper, "How Long Do Markets Need to Fully React to Monetary Policy Announcements?" [1] (henceforth JMP), confronts the ad-hoc 30-minute event window standard in monetary policy studies. This choice ignores a crucial trade-off: short windows may capture incomplete reactions, while long windows risk contamination from other news. I propose the first systematic, data-driven method for selecting the optimal event window. My approach uses a neural network to map the textual content of Federal Open Market Committee (FOMC) statements directly to asset price changes, generating a signal of the market's full response. The optimal window is then estimated as the time horizon that minimizes the error between the observed price change and this text-based signal, re-framing the problem from one of assumption to one of optimisation.

In "Deciphering Financial Market Reactions to OPEC Announcements: A Neural Network Approach" [2] (henceforth OPEC paper), I tackle a different identification challenge: isolating exogenous oil supply expectation shocks. Standard methods are contaminated by unrelated news and conflate supply information with OPEC's commentary on global demand. To address this, I develop a novel two-step procedure to purify the shock measure. First, I fine-tune a neural network on the full corpus of OPEC press releases. Second, I use this trained model to predict oil price changes based only on the manually curated, supply-related text from those releases. The model's out-of-sample predictions form a new series of "purified surprises" attributable solely to news about future oil supply.

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2 How Policy Communication Text Impacts Expectations and the Economy

Using text as data to provide more credible measures of market reactions and policy shocks, my research yields new insights into how institutional communication affects the expectations formation of markets and economic outcomes.

Applying my systematic estimation procedure reveals that financial markets need significantly more time to process FOMC news than is typically assumed. The optimal event window is at least 40 minutes and lengthens with asset maturity, reaching 50–60 minutes for longer-term futures. Additionally, statements with greater complexity, less similarity, and the presence of dissents are associated with longer event windows on average. This choice is consequential: the correlation between monetary policy surprises measured within optimal versus conventional 30-minute windows decreases with asset maturity. These differences materially alter the forward guidance component of monetary policy shocks. Crucially, constructing these shocks within optimal window lengths magnifies their impact on interest rates, break-even inflation, and equities. Furthermore, responses of macroeconomic variables are estimated with greater precision when using shocks made within the optimal windows. In other words, using conventional windows could attenuate the measured effects of policy.

My OPEC paper shows that using the purified surprises in a structural vector autoregression resolves puzzles present in the literature. Whereas previous work found a contractionary oil supply shock led to a puzzling initial expansion in world industrial production (IP) and a decline in U.S. unemployment, my text-based shock generates impulse responses consistent with economic theory: an immediate and persistent contraction in world IP and an unambiguous increase in unemployment.

3 Future Research

My future research will extend these agendas along three dimensions. One project will apply the methodology of my JMP to other forms of policy communication, such as Fed Chair speeches, where systematically estimating the full reaction times is increasingly important. A second project will investigate non-textual communication by using deep learning models on audio recordings of FOMC press conferences to analyse how the Fed Chair's speech patterns and delivery impact financial markets. A third project will enhance my OPEC paper's method by incorporating OPEC forecasts and news headlines to refine the shock extraction.

References

[1] Paul L. Tran. "How Long Do Markets Need to Fully React to Monetary Policy Announcements?" Job Market Paper. 2025. URL.

[2] Paul L. Tran. "Deciphering Financial Market Reactions to OPEC Announcements: A Neural Network Approach". SSRN Working Paper No 4968664. 2025. DOI: 10.2139/ssrn.4968664. URL.