Elysia Nguyen
DA 401-01
Dr. Scarcioffolo
March 16, 2025

From Markets to Fields:
The Impact of Vietnam's 1985 Dong Devaluation on Rice Prices and Exports

Problem Statement

Emerging from nearly a century of political conflict and economic stagnation, Vietnam faced the immense challenge of rebuilding its economy following the Vietnam War. In the post-war period, the country's monetary policy was characterized by rigid price controls and an overvalued exchange rate, leading to severe macroeconomic imbalances (Cima & Library of Congress, 1989; Drabek, 1990; Minot & Goletti, 2000; Vu & Nguyen, 2021). To address these issues, Vietnam implemented a drastic devaluation of the dong in 1985, shifting the exchange rate from 1.20 VND per USD to 15 VND per USD (Cima & Library of Congress, 1989). Among the most impacted industries was agriculture, particularly the rice sector, where price and export dynamics underwent significant shifts. This research seeks to examine the impact of the 1985 dong devaluation on rice prices and exports, addressing the question: What was the impact of the 1985 devaluation of the Vietnam dong on rice prices in the domestic economy and rice exports in the international market? This study hypothesizes that the devaluation simultaneously reduces prices in USD and boosts exports of rice, supporting Vietnam's transition into a leading rice exporter (Minot & Goletti, 2000; USDA, 2025).

Data and Methodology

This study utilizes annual time-series data spanning 1975 to 2023, sourced from the Statistics Division of the Food and Agriculture Organization of the United Nations (FAOSTAT). "FAOSTAT provides free access to food and agriculture data for over 245 countries and territories and covers all FAO regional groupings from 1961 to the most recent year available" (Food and Agriculture Organization of the United Nations, n.d.). As key variables are identified in the research question, data on exchange rates, export quantities, production values, and production quantities are retrieved from FAOSTAT, with the latter two used to calculate producer prices. Given the dynamic relationships among the time-series variables, a Vector Autoregressive (VAR) model, well-suited for capturing feedback loops and lagged effects in macroeconomic

data, is employed (Bagliano & Favero, 1998; Cochrane, 1998). The analysis is conducted in R which offers robust tools, namely the *vars* package, for estimating VAR models, generating impulse response functions, performing forecast error variance decompositions, and conducting stability diagnostics (Pfaff, 2008). This methodological approach enables the study to assess both short-run and long-run effects of exchange rate shocks on agricultural outcomes. Furthermore, the research design allows for extensions to Structural VAR (SVAR) and Structural Vector Error Correction (SVEC) models, which can further distinguish between anticipated and unanticipated shocks and explore cointegration relationships (Cochrane, 1998; Rudebusch, 1998).

Early Results

Process Overview

The analysis begins with data preprocessing, where individual datasets corresponding to the relevant variables are loaded into R and merged based on common key characteristics. The overall dataset is then pivoted to facilitate analysis. To derive a meaningful measure of agricultural pricing, producer prices are initially calculated as production values divided by production quantities. However, these calculated values remain nearly constant over time, limiting their usefulness in a Vector Autoregressive (VAR) framework. Thus, the analysis instead includes production values, acknowledging that the values are not standardized and may obscure the clarity of the monetary shock. The dataset is then explored through time-series visualizations, with line charts displaying trends in each variable and marking the 1985 devaluation to observe any shifts. Before modeling, all variables are transformed into stationary time series by taking the first difference. A data matrix is then constructed, which is followed by lag order selection. The VAR model is ultimately estimated with two lags. To analyze the dynamic relationships among variables, a generalized Cholesky decomposition is performed to orthogonalize the error terms, enabling a more interpretable impulse response function (IRF). The IRF helps illustrate how shocks to exchange rates propagate through agricultural production and trade over time, providing key insights into the economic effects of the 1985 devaluation. These analytical steps are outlined clearly in the code and will be provided in the Appendix of the final report.

Data Visualization

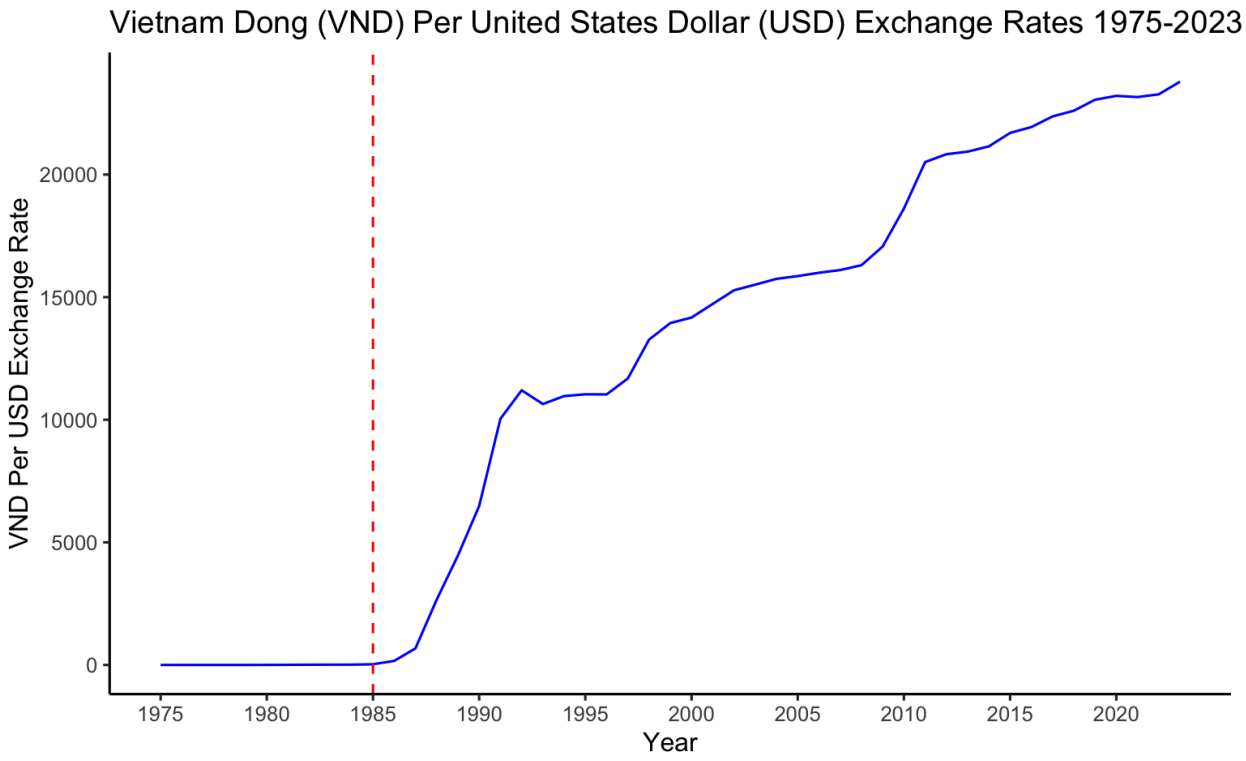

Figure 1: Vietnam Dong (VND) Per United States Dollar (USD) Exchange Rates 1975–2023

Figure 1 illustrates the VND per USD exchange rate from 1975 to 2023, with the 1985 devaluation marked by a red dashed line. Prior to 1985, the exchange rate remained nearly fixed under Vietnam's centrally planned economy. However, the 1985 devaluation resulted in a sharp increase, marking the beginning of a sustained depreciation trend. This shift was the government's response to macroeconomic imbalances and was later supported by broader market-oriented reforms. This dramatic shift in the exchange rate policy set the stage for changes in Vietnam's rice sector, the core focus of this study.

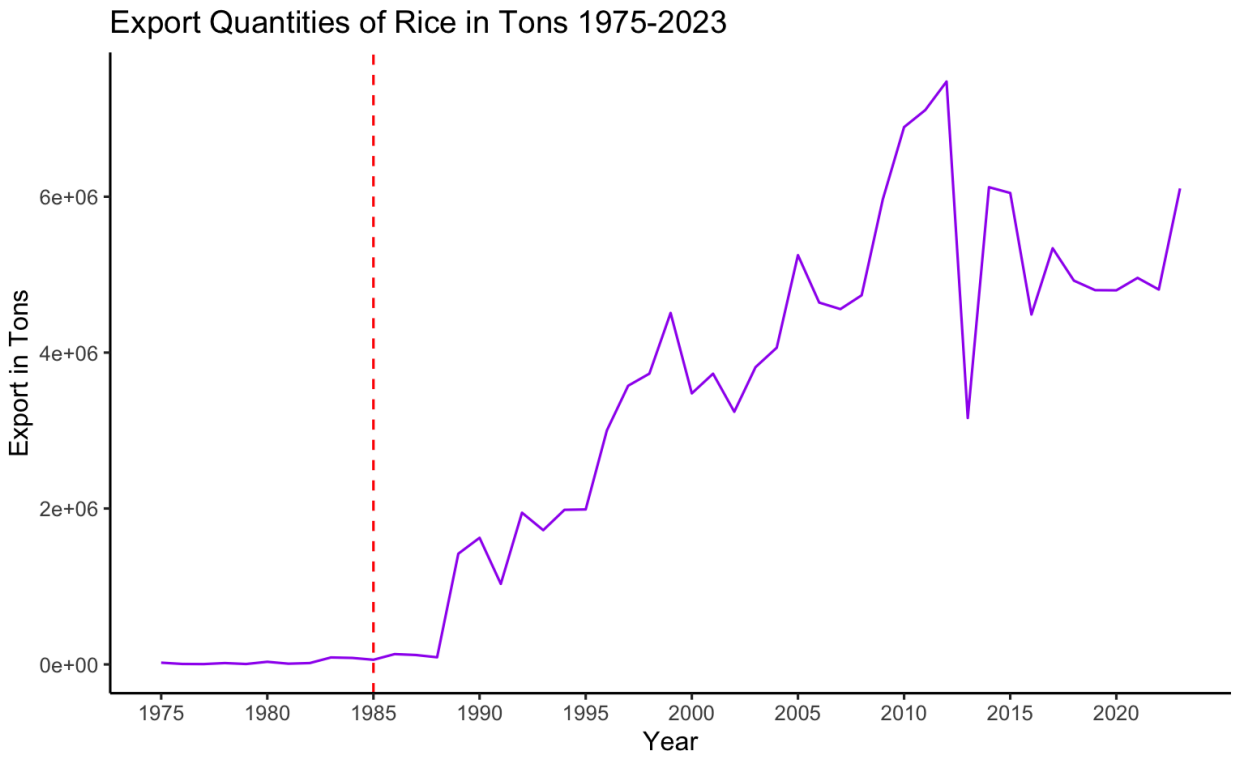

Figure 2: Export Quantities of Rice in Tons 1975–2023

Figure 2 displays the annual export quantities of rice, one of Vietnam's most critical agricultural commodities, from 1975 to 2023. The red dashed line marks the 1985 devaluation, a key event expected to influence trade performance. Prior to the devaluation, rice exports were minimal, reflecting Vietnam's focus on domestic food security and the inefficiencies of its state-controlled economy. However, shortly after 1985, rice exports surged, signaling a transition toward greater integration into international markets. This sharp increase in export quantities aligns with the theoretical expectation that currency devaluation enhances export competitiveness by making domestically produced goods more affordable in foreign markets. The steady growth in rice exports from the late 1980s into the early 2000s further reflects the effects of the broader Doi Moi reforms, which liberalized trade policies and encouraged private sector participation in agricultural production. Despite occasional fluctuations, including notable declines around 2015, the long-term trend supports the hypothesis that the devaluation played a crucial role in Vietnam's emergence as a major rice exporter. Further analysis using IRF will clarify the extent to which the exchange rate shock influenced these export dynamics.

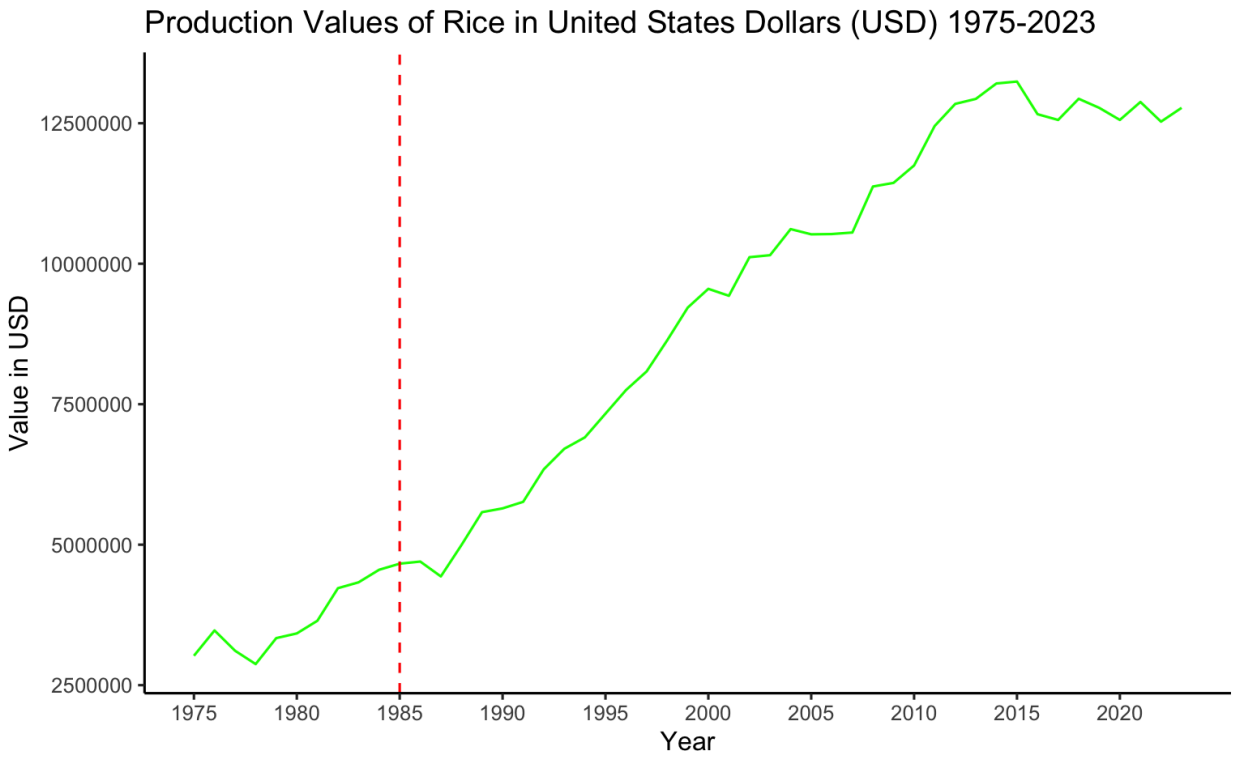

Figure 3: Production Values of Rice in United States Dollars (USD) (1975–2023)

Figure 3 presents the production values of rice in USD from 1975 to 2023, with the 1985 devaluation marked by a red dashed line. Before the devaluation, production values exhibited gradual growth, but following the 1985 devaluation, they began to rise significantly. This upward trend suggests that, despite the short-term inflationary pressures caused by the devaluation, Vietnam's agricultural sector benefited in the long run from increased market efficiency, trade liberalization, and foreign investment. Unlike the immediate surge observed in exports, production values grew at a more gradual and sustained pace, likely driven by increased domestic production capacity, improved access to global markets, and greater price competitiveness. The long-term stability of this trend further reinforces the hypothesis that the devaluation, coupled with broader economic reforms, helped transform Vietnam into a leading global rice producer and exporter. This relationship is further explored through the IRF, which helps quantify the dynamic effects of exchange rate shocks on production values over time.

Impulse Response Function

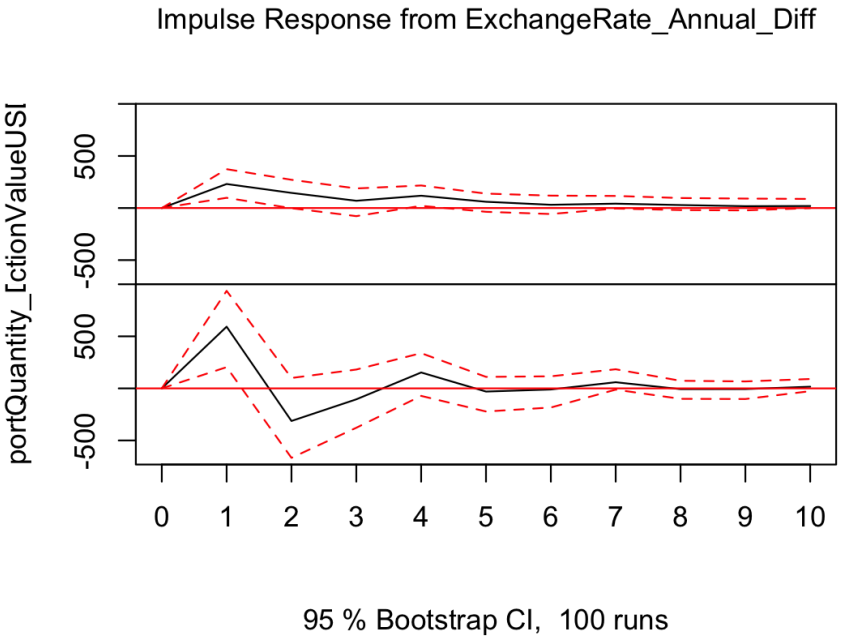

Figure 4: Impulse Responses of Production Values and Export Quantities from Exchange Rates

The IRF shown in the figure illustrates the dynamic effects of an exchange rate shock on production values and export quantities over a ten-year horizon. The solid black lines represent the estimated responses, while the dashed red lines denote the 95% bootstrap confidence intervals derived from 100 replications. The results provide valuable insights into how Vietnam's agricultural sector reacted to currency fluctuations following the 1985 devaluation.

In the first panel, the response of production values to an exchange rate shock appears relatively muted, showing a slight increase in the first two periods before stabilizing. This suggests that in the immediate aftermath of a currency devaluation, production values in the agricultural sector experienced only marginal fluctuations. One potential explanation is that while devaluation may have increased the nominal value of agricultural production in domestic currency, input costs, inflation, and supply chain rigidities limited substantial real gains. Furthermore, the narrow confidence intervals indicate that this response is statistically stable over time.

The second panel presents the response of export quantities to the exchange rate shock, revealing a distinct short-term surge in agricultural exports immediately following the devaluation. This aligns with the theoretical expectation that a weaker currency makes domestically produced goods more competitive in international markets. However, the response is volatile, with a sharp increase followed by a temporary decline before stabilizing. This pattern suggests that while the devaluation provided an initial boost to exports, other factors, such as inflationary pressures, trade policy adjustments, or external demand constraints, may have tempered the long-term gains. The widening confidence intervals in later periods indicate increasing uncertainty in the estimated effects, reinforcing the need for further structural analysis, such as an SVAR model, to disentangle anticipated from unanticipated shocks.

Overall, these findings support the hypothesis that the 1985 devaluation had a significant but complex impact on Vietnam's agricultural sector, with immediate gains in export volumes but limited and less predictable effects on production values. Future refinements will explore whether these relationships hold under alternative model specifications and whether external shocks, such as global commodity price fluctuations, played a role in shaping the observed trends.

Discussion

The preliminary findings provide compelling evidence that the 1985 devaluation of the Vietnam dong had a significant impact on the rice sector, particularly in export performance. The sharp increase in rice export quantities following the devaluation aligns with theoretical expectations that a weaker currency enhances international competitiveness. However, the response of production values in USD was more gradual, suggesting that while devaluation played a role, other structural factors, such as agricultural policy reforms, increased production capacity, and global market conditions, also contributed to long-term growth. The IRF further supports the idea that exchange rate shocks had an immediate but volatile effect on exports, while production values adjusted more steadily over time, reflecting structural changes in the agricultural sector.

Moving forward, further refinements to the analysis could enhance the accuracy and depth of the findings. First, analyzing exchange rates at a monthly level rather than annually could provide a more granular understanding of short-term price fluctuations and export dynamics. Second, incorporating control variables such as GDP and inflation would help isolate

the effects of devaluation from broader macroeconomic trends. Third, given the challenges in calculating producer prices and interpreting the production values data, future analysis may focus exclusively on exports, which exhibited a clearer and more interpretable response to currency devaluation. Fourth, extending the analysis to Structural Vector Autoregressive (SVAR) or Structural Vector Error Correction (SVEC) models will allow for a deeper examination of the causal mechanisms underlying exchange rate shocks, distinguishing between anticipated and unanticipated policy shifts and exploring long-term equilibrium relationships in the presence of cointegration. Lastly, any figures, tables, write-ups, and code will be thoroughly polished in the final deliverables and logically organized in a complete GitHub repository. These next steps will further strengthen the study's ability to quantify the role of exchange rate policy in shaping Vietnam's agricultural trade trajectory.

Works Cited

Bagliano, F. C., & Favero, C. A. (1998). Measuring monetary policy with VAR models: An evaluation. *European Economic Review, 42*, 1069–1112. https://www.sciencedirect.com/science/article/pii/S0014292198000051.

Cima, R. J., & Library of Congress, Federal Research Division. (1989). *Vietnam: A country study*. Washington, D.C.: Federal Research Division, Library of Congress: For sale by the Supt. of Docs., U.S. G.P.O. [PDF]. Retrieved from https://www.loc.gov/item/88600482.

Cochrane, J. H. (1998). What do the VARs mean? Measuring the output effects of monetary policy. *Journal of Monetary Economics, 41*, 277–300. https://www.sciencedirect.com/science/article/pii/S0304393297000755.

Drabek, Z. (1990). *A case study of a gradual approach to economic reform: The Viet Nam experience of 1985-88* (World Bank Report No. 1). World Bank. Retrieved from https://documents1.worldbank.org/curated/en/109111468915703601/pdf/multi0page.pdf.

Food and Agriculture Organization of the United Nations. (n.d.). *FAOSTAT database*. Rome, Italy: FAO. Retrieved 2025 from https://www.fao.org/faostat/en.

Minot, N., & Goletti, F. (2000). *Rice market liberalization and poverty in Viet Nam* (Vol. 114). International Food Policy Research Institute. Retrieved from https://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/125421/filename/125422.pdf.

Pfaff, B. (2008). VAR, SVAR and SVEC Models: Implementation within R package vars. *Journal of Statistical Software, 27*(4). https://www.jstatsoft.org/article/view/v027i04.

Rudebusch, G. D. (1998). Do measures of monetary policy in a VAR make sense? *International Economic Review, 39*(4), 907–931. https://www.jstor.org/stable/2527344.

U.S. Department of Agriculture, Economic Research Service. (n.d.). *Rice sector at a glance*. Retrieved January 26, 2025, from https://www.ers.usda.gov/topics/crops/rice/rice-sector-at-a-glance.