

Fred Westfield, Professor Emeritus of Economics

November 7, 1926 – April 24, 2019

Fred Westfield was born on November 7, 1926, in Essen, Germany. He died on April 23, 2019 in Nashville, Tennessee. When Fred was an early teenager and war loomed in Europe, he was sent to the United States to live with relatives, who resided in Nashville. Fred graduated from Nashville's West End High School in 1944. His first stop after high school was the U.S. Army, where his mathematical ability and understanding of physics led him to serve as an ordnance instructor. After his discharge in 1946, Fred returned to Nashville, and four years later graduated from Vanderbilt. He then enrolled in the Ph.D. program in economics at M.I.T., and three years later took up a Lecturer appointment at Northwestern University.

Fred completed his doctoral dissertation in 1957, writing on "Static and Dynamic Optimization Problems in the Multi-Plant Firm with Particular Reference to the Electric Power Industry." His thesis supervisors were Paul Samuelson and Robert Solow, both of whom would later win the Economics Nobel Prize. Upon completing his Ph.D. Fred was promoted to Assistant Professor at Northwestern, and three years later to Associate Professor. In 1965 he moved to Vanderbilt as Professor of Economics, where he remained until his retirement in 1998.

It was at Vanderbilt in the mid 1960s where Fred met his wife, Joyce, at a university picnic. They had been married for 44 years when Joyce passed away in 2012.

Fred's earliest research focused on Operations Research and optimization methods, addressing topics as diverse as engineering processes of zinc smelting and refining, and the operation of hydrothermal electric generation systems. His early publications even included two items in *Jet Propulsion*, the journal of the American Rocket Society.

Fred's publications in the mainstream economics literature addressed three issues. The first was how to apply marginal analysis to multi-plant firms, balancing long run marginal costs across plants (this was the focus of his Ph.D. thesis and a 1959 article in the *Quarterly Journal of Economics*).

The second was an extension and theoretical generalization of what was called the Averch-Johnson (AJ) effect, a phenomenon that was exposed by the great electrical equipment conspiracy of the early 1960s. In a 1964 *American Economic Review* article, Fred demonstrated that utilities subject to rate-of-return regulation could benefit from a conspiracy among their suppliers that raised the price of their capital inputs (such as generation and switching equipment) because doing so raised the base on which the regulated rate-of-return was calculated. Thus the AJ effect was commonly called gold-plating to reflect the idea that inputs were over-priced without much resistance from the public utilities that purchased them.

The third issue was how vertical integration is likely to affect prices paid by the ultimate consumers of a product. In the 1981 *American Economic Review*, he showed rigorously how, were an upstream monopolist to buy its competitive downstream distributors, final price to

consumers could rise, stay the same, or decline depending on the combinations of the elasticity of substitution among inputs and the elasticity of demand for the final distributed product.

All of Fred's research was characterized by careful mathematical demonstrations of general theoretical conclusions that derived from common sense intuition. Thus it is of no surprise that Fred taught Vanderbilt's graduate microeconomic theory sequence for decades.

Fred supervised numerous Ph.D. dissertations, demanding precision and accuracy from his students. He was known to be extremely patient and generous with his time, willing to keep working with a student no matter how long it took, but, at the end, it had to be correct.

Throughout his career Fred consulted on various issues involving economic regulation, including the cost of capital and pricing for water supply, natural gas, telephone service, and electricity production. At various times he was involved as a consultant on public utility pricing in Argentina, Chattanooga, Brazil, Europe, South Korea, Kenya, and Pakistan.

Fred served on the College of Arts and Science Faculty Council twice, and in the University Faculty Senate twice. He served a term on the Graduate Faculty Council, and was a member of the 1975 university accreditation committee, and the Graduate School Committee on Student Affairs. He was the Economics Department Director of Undergraduate Studies for three years.

Those who remember Fred as a colleague point to his jovial nature and enthusiasm for life that seemed to permeate his every move. He remained active in the department as an emeritus professor all the way through early 2019, frequently attending the department's endowed lectures. He will be missed by his colleagues and friends.