

# What is Econometrics?

The art & science of using data, mathematics, and statistics to understand (and forecast) how economies work.

**Key aim:** Turn real-world data into evidence for decision-making.





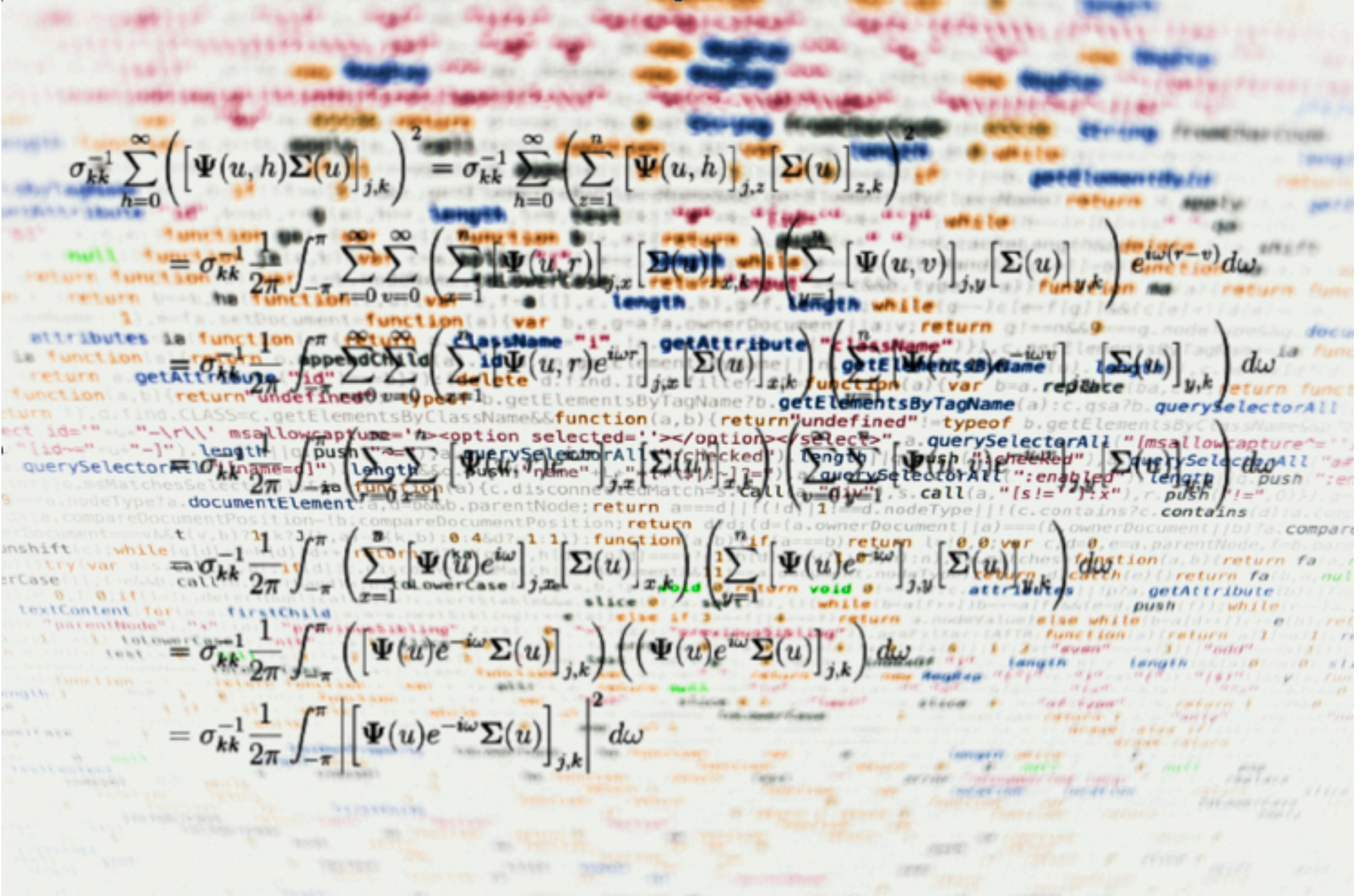
**We deliver**  
**rigorous, relevant tools**  
**that advances our field**  
**and helps institutions make better decisions.**

# Why it matters?

Supports better economic policies.

Helps businesses and governments navigate uncertainty.

Provides early warning signals for crises and transitions.


$$\begin{aligned} \sigma_{kk}^{-1} \sum_{h=0}^{\infty} \left( \left[ \Psi(u, h) \Sigma(u) \right]_{j,k} \right)^2 &= \sigma_{kk}^{-1} \sum_{h=0}^{\infty} \left( \sum_{z=1}^n \left[ \Psi(u, h) \right]_{j,z} \left[ \Sigma(u) \right]_{z,k} \right)^2 \\ &= \sigma_{kk}^{-1} \frac{1}{2\pi} \int_{-\pi}^{\pi} \sum_{v=0}^{\infty} \sum_{u=0}^{\infty} \left( \sum_{z=1}^n \left[ \Psi(u, r) \right]_{j,z} \left[ \Sigma(u) \right]_{z,k} \right) \left( \sum_{y=1}^n \left[ \Psi(u, v) \right]_{j,y} \left[ \Sigma(u) \right]_{y,k} \right) e^{i\omega(r-v)} d\omega \\ &= \sigma_{kk}^{-1} \frac{1}{2\pi} \int_{-\pi}^{\pi} \sum_{z=1}^n \sum_{y=1}^n \left( \sum_{u=0}^{\infty} \left[ \Psi(u, r) \right]_{j,z} \left[ \Sigma(u) \right]_{z,k} \right) \left( \sum_{u=0}^{\infty} \left[ \Psi(u, v) \right]_{j,y} \left[ \Sigma(u) \right]_{y,k} \right) e^{i\omega(r-v)} d\omega \\ &= \sigma_{kk}^{-1} \frac{1}{2\pi} \int_{-\pi}^{\pi} \left( \sum_{z=1}^n \left[ \Psi(u) e^{-i\omega} \right]_{j,z} \left[ \Sigma(u) \right]_{z,k} \right) \left( \sum_{y=1}^n \left[ \Psi(u) e^{-i\omega} \right]_{j,y} \left[ \Sigma(u) \right]_{y,k} \right) d\omega \\ &= \sigma_{kk}^{-1} \frac{1}{2\pi} \int_{-\pi}^{\pi} \left( \left[ \Psi(u) e^{-i\omega} \Sigma(u) \right]_{j,k} \right)^* \left( \left[ \Psi(u) e^{-i\omega} \Sigma(u) \right]_{j,k} \right) d\omega \\ &= \sigma_{kk}^{-1} \frac{1}{2\pi} \int_{-\pi}^{\pi} \left| \left[ \Psi(u) e^{-i\omega} \Sigma(u) \right]_{j,k} \right|^2 d\omega \end{aligned}$$