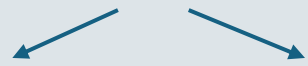


Step 1

Research background

Central role of macroeconomic forecasting

monetary policy formulation  
fiscal planning  
risk management



Real-world challenges

Existing methods & limitations

- Structural breaks
- Institutional transitions
- Cross-country heterogeneity

Traditional econometric models  
↓  
overly strong linear assumptions (VAR / DSGE)  
  
Deep learning models  
↓  
long-cycle drift / lack of interpretability (LSTM / TFT)

Core contradiction

Needs to be satisfied simultaneously:

flexibility + stability + interpretability

Step 2

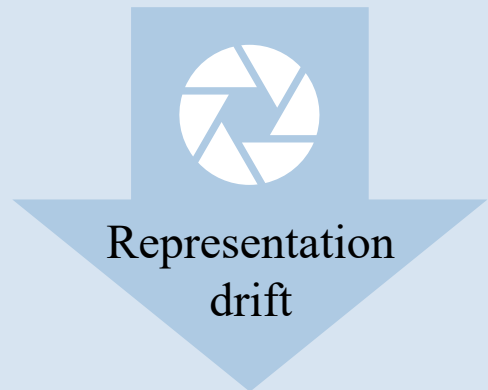
Problem identification

Unconstrained latent representations

Across time steps changes

Network depth increase

Forecast horizon extension



Direct consequences

unstable attention patterns

unreliable long-horizon forecasts

Step 3

Model

Quantum-inspired:  
unitary transformation structure  
Unitary evolution preserving norm and inner products



QTFT Structure

TFT basic + Unitary transformation layer  
Mathematical constraints:  $U^T U = I$   
Norm preservation guarantee:  $\|\tilde{z}\|_2 = \|z\|_2$

- III. Temporal attention
- ★ II. Unitary latent transformation
- I. Variable selection network



Key design principles

Constraining representation geometry rather than model capacity  
  
Preserving expressive capacity  
  
Enhancing stability