Vector Autoregression (VAR) models, particularly regarding stationarity requirements:

1. Basic Differences:
- VAR models are used for stationary time series
- VECM models are specifically designed for non-stationary series that are cointegrated
2. Stationarity Requirements: For VAR:
- All variables must be stationary at the same level
- Usually requires differencing of variables until they become stationary
- Works with I(0) variables (already stationary)

For VECM:

- Variables should be non-stationary in levels but have same order of integration
- Typically uses I(1) variables that are cointegrated
- No need to difference variables as VECM captures long-run relationships
3. Long-run Relationships:
- VAR doesn't capture long-run equilibrium relationships
- VECM includes an error correction term that captures long-run equilibrium adjustments
4. When to Use Each: Use VAR when:
- Variables are already stationary
- No cointegration exists between variables

Use VECM when:

- Variables are non-stationary but cointegrated
- You want to analyze both short-run dynamics and long-run relationships

So, regarding your specific question about stationarity levels:

- For VAR: Yes, variables must be stationary at the same level
- For VECM: Variables must be integrated of the same order (usually I(1)) but are not stationary in their levels

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So, regarding your specific question about stationarity levels:

- For VAR: Yes, variables must be stationary at the same level
- For VECM: Variables must be integrated of the same order (usually I(1)) but are not stationary in their levels
- Both series need first differencing to become stationary
- Their levels show trending behavior
- If cointegrated, they share a long-run equilibrium relationship
- VECM captures both:
    - Long-run relationship (levels)
    - Short-run dynamics (differences)

5. Testing Process:

1. First, test for unit roots in levels
2. Confirm variables are I(1)
3. Test for cointegration
4. If cointegrated, proceed with VECM

6. Key Point: The magic of VECM is that it can work with non-stationary data directly because:

- It models the long-run relationship between non-stationary variables
- The error correction term ensures the system returns to equilibrium
- The differences handle short-run dynamics