**SARIMAX((self, endog, exog=None, order=(1, 0, 0),seasonal\_order=(0, 0, 0, 0), trend=None,measurement\_error=False,time\_varying\_regression=False,mle\_regression=True,simple\_differencing=False,enforce\_stationarity=True,enforce\_invertibility=True,hamilton\_representation=False, \*\*kwargs))**

**Parameters  
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endog : array\_like  
 The observed time-series process :math:`y`  
exog : array\_like, optional  
 Array of exogenous regressors, shaped nobs x k.  
order : iterable or iterable of iterables, optional  
 The (p,d,q) order of the model for the number of AR parameters,  
 differences, and MA parameters. `d` must be an integer  
 indicating the integration order of the process, while  
 `p` and `q` may either be an integers indicating the AR and MA  
 orders (so that all lags up to those orders are included) or else  
 iterables giving specific AR and / or MA lags to include. Default is  
 an AR(1) model: (1,0,0).  
seasonal\_order : iterable, optional  
 The (P,D,Q,s) order of the seasonal component of the model for the  
 AR parameters, differences, MA parameters, and periodicity.  
 `d` must be an integer indicating the integration order of the process,  
 while `p` and `q` may either be an integers indicating the AR and MA  
 orders (so that all lags up to those orders are included) or else  
 iterables giving specific AR and / or MA lags to include. `s` is an  
 integer giving the periodicity (number of periods in season), often it  
 is 4 for quarterly data or 12 for monthly data. Default is no seasonal  
 effect.  
trend : str{'n','c','t','ct'} or iterable, optional  
 Parameter controlling the deterministic trend polynomial :math:`A(t)`.  
 Can be specified as a string where 'c' indicates a constant (i.e. a  
 degree zero component of the trend polynomial), 't' indicates a  
 linear trend with time, and 'ct' is both. Can also be specified as an  
 iterable defining the polynomial as in `numpy.poly1d`, where  
 `[1,1,0,1]` would denote :math:`a + bt + ct^3`. Default is to not  
 include a trend component.  
measurement\_error : boolean, optional  
 Whether or not to assume the endogenous observations `endog` were  
 measured with error. Default is False.  
time\_varying\_regression : boolean, optional  
 Used when an explanatory variables, `exog`, are provided provided  
 to select whether or not coefficients on the exogenous regressors are  
 allowed to vary over time. Default is False.  
mle\_regression : boolean, optional  
 Whether or not to use estimate the regression coefficients for the  
 exogenous variables as part of maximum likelihood estimation or through  
 the Kalman filter (i.e. recursive least squares). If  
 `time\_varying\_regression` is True, this must be set to False. Default  
 is True.  
simple\_differencing : boolean, optional  
 Whether or not to use partially conditional maximum likelihood  
 estimation. If True, differencing is performed prior to estimation,  
 which discards the first :math:`s D + d` initial rows but reuslts in a  
 smaller state-space formulation. If False, the full SARIMAX model is  
 put in state-space form so that all datapoints can be used in  
 estimation. Default is False.  
enforce\_stationarity : boolean, optional  
 Whether or not to transform the AR parameters to enforce stationarity  
 in the autoregressive component of the model. Default is True.  
enforce\_invertibility : boolean, optional  
 Whether or not to transform the MA parameters to enforce invertibility  
 in the moving average component of the model. Default is True.  
hamilton\_representation : boolean, optional  
 Whether or not to use the Hamilton representation of an ARMA process  
 (if True) or the Harvey representation (if False). Default is False.  
\*\*kwargs  
 Keyword arguments may be used to provide default values for state space  
 matrices or for Kalman filtering options. See `Representation`, and  
 `KalmanFilter` for more details.**