



(-)ansa



```

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*****/

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#HPF Apply "Hodrick-Prescott" filter to time series.
#
#   hpf_hansa(matrixName, lamda)
#   Apply HP filter on the specified matrixName using the specified lamda
#   value
#
#   Example:
#
#       hpf_hansa('A', 500)
#
#   It returns a structure that contains a returnMessage and returnValue(which is
#   0 if the call is successful or a negative number)
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```

```

hpf_hansa <- function(y, lam) {

    r=rows(y)
    c=cols(y)

    if(r > c)
        ny=r
    else
        ny=c
    end

    if(r < c)
        trans('y')
    end

    cat('\nComputing Hodrick-Prescott Filtered Time Series with Matrix
        Inversion using HANSA')
    cat('\nGrowth Component is available in HANSA as g')

    # Strategy: Structure difference equation as a matrix equation:
    #           M g = y
    #           and then invert M

    zeros(ny,ny, 'M')

    ones(ny-2,1, 'd1')
    multiply('d1', lam, 'd1')

    ones(ny-1,1, 'd2')
    multiply('d2', (-4*lam), 'd2')
    setElement('d2', 2, 1, 1, 1, (-2*lam))

```



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```
setElement('d2',2,1,(ny-1),(ny-1),(-2*lam))

ones(ny,1,'d3')
multiply('d3', (1+6*lam), 'd3')
setElement('d3',2,1,1,1,(1+lam));
setElement('d3',2,1,2,2,(1+5*lam));
setElement('d3',2,1,(ny-1),(ny-1),(1+5*lam));
setElement('d3',2,1,ny,ny,(1+lam));

diag('d1', 'c1', 2)
diag('d2', 'c2', 1)
diag('d3', 'c3', 0)
diag('d2', 'c4', -1)
diag('d1', 'c5', -2)

add('c1','c2')
add('c2','c3')
add('c3','c4')
add('c4','c5')

inv('c5')

r1=rows('c5')
zeros(r1,c,'g')

multiply('c5',y,'g')

if (r < c)
    trans('g')
end

}
```