Package 'DIMORA'

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Title Diffusion Models R Analysis

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Description The implemented methods are: Bass Standard model, Bass Generalized model (with rectangular shock, exponential shock, mixed shock and armonic shock. You can choose to add from 1 to 3 shocks), Guseo-Guidolin model and Variable Potential Market model. The Bass model consists of a simple differential equation that describes the process of how new products get adopted in a population, the Generalized Bass model is a generalization of the Bass model in which there is a ``carrier'' function x(t) that allows to change the speed of time sliding. In some real processes the reachable potential of the resource available in a temporal instant may appear to be not constant over time, because of this we use Variable Potential Market model, in which the Guseo-Guidolin has a particular specification for the market function.

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R topics documented:

BASS.generalized   *Function that returns the results of generalized Bass model*

Description

This function allows you to estimate the generalized Bass model with an Esponential, Rectangular, Armonic or Mixed shock.

Usage

```
BASS.generalized(sales,shock,nshock,prelimestimates,alpha)
```

Arguments

sales	The istantanuous sales
shock	The function which caracterize the shock, the implemented options are: Esponential ('exp'), Rectangular ('rett'), Armonic ('armonic') and Mixed ('mixed').
nshock	The number of shocks desired (from 1 to 3)
prelimestimates	
	A vector containing the preliminar estimates of the parameters
alpha	The desired significativity, the defaul value is 0.05

Author(s)

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See Also

[BASS.standard](#)

[BASS.standard.generator](#)

[BASS.plot](#)

[make.instantaneous](#)

[GG.model](#)

BASS.plot   *Function that draws the plot of Bass model*

Description

Function that draws the plot of Bass model.

Usage

```
BASS.plot(data)
```

Arguments

data   result of BASS.standard.generator

Author(s)

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of Padova, Italy <http://www.unipd.it>

See Also

BASS.standard

BASS.standard.generator

make.instantaneous

BASS.generalized

GG.model

Examples

```
#Example 1

data = BASS.standard.generator(10,0.1,0.1,8,3)
BASS.plot(data)
```

BASS.standard   *Function that returns estimate parameters of bass standard model and
                             the plot*

Description

This function allows you to calculate the parameters of the bass model in 2 different ways: using
nls or using optim(which minimize the residual squared sum).

Usage

```
BASS.standard(sales,method,prelimestimates,alpha,display)
```

Arguments

sales	The istantanuous sales
method	The way you decide to estimate parameters, 'nlm' or 'optim'
prelimestimates	
	A vector containing the starting values, that the algorithm use to estimate the parameters, the default values are: m = sum(sales)+100, p = 0.01, q = 0.1
alpha	The significativity level for confidence intervals
display	T or F if you want to display the graphs of the models or not, the default value is T

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See Also

[BASS.standard.generator](#)

[BASS.plot](#)

[make.instantaneous](#)

[BASS.generalized](#)

[GG.model](#)

Examples

```
#Example 1
Sales <- c(840,1470,2110,4000,7590,10950,10530,9470,7790,5890)
BASS.standard(sales = Sales,method = 'nls')
```

BASS.standard.generator
                      Function that returns the results of standard Bass model

---

Description

Function that returns the results of standard Bass model.

Usage

```
BASS.standard.generator(m,p,q,tstart=1,n=50)
```

Arguments

m	potential of market
p	parameter of inovations
q	parameter of imitators
tstart	inital time
n	number of values

Author(s)

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See Also

BASS.standard

BASS.plot

make.instantaneous

BASS.generalized

GG.model

Examples

```
#Example 1

BASS.standard.generator(10,0.1,0.1,8,3)
```

GG.model   *Function that returns the results of Guseo-Guidolin model*

Description

Function returns the results of dynamic market potential model, with m(t) defined as the classic Guseo-Guidolin model or defining yout own m(t) function (which must depend only on t, and must be similiar to a repartition function). To use this function, you have two choices:

1) Use the classic GG model, and you have to pass to the function: sales, preliminar estimates and alpha

2) Use the model definig your own m(t) function, in this case you have to pass to the function: sales,preliminar estimates, mt (as a function object) and alpha. Remember that the m(t) function must be positive and similar to a repartition function, in fact, the function must have codomain in (0,1).

N.B.

You don't have to pass the preliminar estimates because the default values are taken by running the BASS.standard function. This doesn't guarantee that with this starting point the algorith converge!

Usage

```
GG.model(sales,prelimestimates,mt,alpha=0.05,...)
```

Arguments

sales	The istantanuous sales
prelimestimates	
	A vector containing the preliminar estimates of the parameters, the default value is taken by BASS standard estimate
mt	A function type object, which represent the variable market, if you don't specify a function the default is the classic GG-model
alpha	The desired significativity for the interval of confidence, the defaul value is 0.05
...	Other grafics parameters

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See Also

BASS.standard

BASS.standard.generator

BASS.plot

make.instantaneous

BASS.generalized

Examples

```
# Example 1


dati <- c(169,397,1496,2131,2678,3431,3852,4725,5081,4592,
6272,6572,6479,7092,6669,7498,7380,5993,5882,9523,9885,9437
,10023,10103,9534,11228,10779,10687,11732,11460,12142,11465,
11854,11177,11112,11324,12790,12229,12116,11280,14460,13090,
12383,13076,13518,13781,13455,13758,14747,12405,8145,11245,
12211,14557,13943,14838,14275,14911,14003,14111,14241,13242,
15477,15219,14691,14541,12465,15909,16118,10568,11235,17345,
15694,15746,17129,16127,15691,16689,16552,16326,16485,15615,
17040,16119,13731,16102,14692,14162,17013,17058,15782,14762,
16813,16152,15954,16129,16356,16752)


sp = c(1.69062e+06,2.60513e-03,3.20522e-02,1.00000e-03,1.00000e-01)
sp1 = c(1.69062e+06,2.60513e-03,3.20522e-02)
```

```
GG.model(sales = dati, prelimestimates = sp1 , function(x) pchisq(x,10),col=2)
GG.model(sales = dati, mt = function(x) pchisq(x,10),col=2)
GG.model(sales = dati, prelimestimates = sp,col=2)
GG.model(sales = dati, col=2)
```

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make.instantaneous   *Function that transforms your data*

Description

Function that transforms your cumulate data into instantaneous, this function can be usefull because all the function in this package reqire the istantanus data.

Usage

```
make.instantaneous(cumulate.data)
```

Arguments

cumulate.data   The cumulate data

Author(s)

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See Also

BASS.standard

BASS.standard.generator

BASS.plot

BASS.generalized

GG.model

Examples

```
#Example 1
cumulate.data = c(1,2,3,6,12)
data.inst = make.instantaneous(cumulate.data)
```

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