USAGE

```
ETReg(x, y, intercept=TRUE)
```

ARGUMENTS

x	Matrix of predictors with p columns and n rows. A column of ones will automatically be added for the intercept if intercept=TRUE.
y	Response vector of length n
intercept	Should the regression include an intercept?

VALUE

coef	Vector of estimated coefficients (including the intercept if requested).
cov	The estimated variance-covariance matrix based on the asymptotic normality.
weights	The final weights for each observation.
scale	The value of the estimated scale of the residuals. This comes from the initial LTS estimate.
tau	The lagrange multiplier parameter.

NOTES

This function performs robust linear regression via exponential tilting.

REFERENCE

Efficient robust regression via two-stage generalized empirical likelihood.
Submitted to *Journal of the American Statistical Association.*

EXAMPLE

```
n=20
p=4
```

This first dataset results in a fit different than the OLS estimator

```
set.seed(77)
x = matrix(rnorm(n*p), ncol=p)
y = rnorm(n)
example_fit = ETReg(x, y)
example_fit$coef
```

Intercept	*X1*	*X2*	*X3*	*X4*
-0.01552365	*0.10581029*	*-0.20041610*	*0.06398866*	*-0.49490805*

```
lm(y~x)$coef
```

(Intercept)	*x1*	*x2*	*x3*	*x4*
-0.09431809	*0.12460983*	*-0.17012818*	*0.02800127*	*-0.53724436*

This second dataset results in the solution being the OLS estimator.
The initial robust scale estimate is larger than that obtained by equal weighting.
Hence OLS satisfies the constraints.

```
set.seed(78)
x = matrix(rnorm(n*p), ncol=p)
y = rnorm(n)
example_fit = ETReg(x, y)
```