Coercion between model objects and restriction matrices in the pbkrtest package

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Consider regression models for the 'cars' dataset:

```
R> mod0 <- lm(dist ~ 1, data=cars); coef(mod0)

(Intercept)
      42.98

R> mod1 <- update(mod0, .~. + speed); coef(mod1)

(Intercept)       speed
 -17.579095    3.932409

R> mod2 <- update(mod1, .~. + I(speed^2)); coef(mod2)

(Intercept)       speed  I(speed^2)
  2.4701378   0.9132876   0.0999593
```

Reducing 'mod2' to 'mod0' corresponds to restricting the model space for 'mod2' and so on:

```
R> L21 <- model2remat(mod2, mod1); L21

     [,1]          [,2] [,3]
[1,]    0 -1.544314e-17    1

R> L20 <- model2remat(mod2, mod0); L20

             [,1]        [,2]        [,3]
[1,] 0.000000e+00 -0.03309061 -0.99945236
[2,] 5.724587e-15 -0.99945236  0.03309061

R> L10 <- model2remat(mod1, mod0); L10

     [,1] [,2]
[1,]    0   -1
```

The other way around is that given a restriction matrix and a large model, we can construct the corresponding smaller model:

```
R> new1  <- remat2model(mod2, L21); coef(new1)

      .X1       .X2
 3.932409 17.579095

R> new0a <- remat2model(mod2, L20); coef(new0a)
```

```
  .X1
42.98
```

```
R> new0b <- remat2model(mod1, L10); coef(new0b)
```

```
  .X1
42.98
```

It should be checked that the original and new model matrices span the same space. For now we will simply check that the fitted values are practically identical:

```
R> eps <- 1e-8
R> max(abs(fitted(new1)  - fitted(mod1))) < eps
```

```
[1] TRUE
```

```
R> max(abs(fitted(new0a) - fitted(mod0))) < eps
```

```
[1] TRUE
```

```
R> max(abs(fitted(new0b) - fitted(mod0))) < eps
```

```
[1] TRUE
```