Reshape dataframe using stack/unstack

```
from google.colab import drive
drive.mount('/content/drive')
```

⯈ Go to this URL in a browser: https://accounts.google.com/o/oauth2/auth?client_id=947318989803-6bn6qk8qdgf4n4g3pfee6491h

    Enter your authorization code:
    ....
    Mounted at /content/drive

```
import pandas as pd
df = pd.read_excel("/content/drive/My Drive/pandas/pandas/12_stack/stocks.xlsx",header=
df
```

⯈

Company	Price			Price to earnings ratio (P/E)		
	Facebook	Google	Microsoft	Facebook	Google	Microsoft
2017-06-05	155	955	66	37.10	32.0	30.31
2017-06-06	150	987	69	36.98	31.3	30.56
2017-06-07	153	963	62	36.78	31.7	30.46
2017-06-08	155	1000	61	36.11	31.2	30.11
2017-06-09	156	1012	66	37.07	30.0	31.00

```
df.stack(level=1)
```

⯈

		Price	Price to earnings ratio (P/E)
	Company		
2017-06-05	Facebook	155	37.10
	Google	955	32.00
	Microsoft	66	30.31
2017-06-06	Facebook	150	36.98
	Google	987	31.30
	Microsoft	69	30.56
2017-06-07	Facebook	153	36.78
	Google	963	31.70
	Microsoft	62	30.46
2017-06-08	Facebook	155	36.11
	Google	1000	31.20
	Microsoft	61	30.11
2017-06-09	Facebook	156	37.07
	Google	1012	30.00

```
df.stack(level=0)
```

⤷

	Company	Facebook	Google	Microsoft
2017-06-05	**Price**	155.00	955.0	66.00
	Price to earnings ratio (P/E)	37.10	32.0	30.31
2017-06-06	**Price**	150.00	987.0	69.00
	Price to earnings ratio (P/E)	36.98	31.3	30.56
2017-06-07	**Price**	153.00	963.0	62.00

```
df_stacked=df.stack(level=0)
df_stacked
```

	Company	Facebook	Google	Microsoft
2017-06-05	**Price**	155.00	955.0	66.00
	Price to earnings ratio (P/E)	37.10	32.0	30.31
2017-06-06	**Price**	150.00	987.0	69.00
	Price to earnings ratio (P/E)	36.98	31.3	30.56
2017-06-07	**Price**	153.00	963.0	62.00
	Price to earnings ratio (P/E)	36.78	31.7	30.46
2017-06-08	**Price**	155.00	1000.0	61.00
	Price to earnings ratio (P/E)	36.11	31.2	30.11
2017-06-09	**Price**	156.00	1012.0	66.00
	Price to earnings ratio (P/E)	37.07	30.0	31.00

```
df_stacked.unstack(level=1)
```

Company	Facebook		Google		Microsoft	
	Price	Price to earnings ratio (P/E)	Price	Price to earnings ratio (P/E)	Price	Price to earnings ratio (P/E)
2017-06-05	155.0	37.10	955.0	32.0	66.0	30.31
2017-06-06	150.0	36.98	987.0	31.3	69.0	30.56

3 levels of column headers

```
df2 = pd.read_excel("/content/drive/My Drive/pandas/pandas/12_stack/stocks_3_levels.xls
df2
```

	Price Ratios						Income Statement					
	Price			Price to earnings ratio (P/E)			Net Sales			Net Profit		
Company	Facebook	Google	Microsoft	Facebook	Google	Microsoft	Facebook	Google	Microsoft	Facebook	Google	Micro
Q1 2016	155	955	66	37.10	32.0	30.31	2.6	20	18.70	0.80	5.43	
Q2 2016	150	987	69	36.98	31.3	30.56	3.1	22	21.30	0.97	5.89	
Q3 2016	153	963	62	36.78	31.7	30.46	4.3	24	21.45	1.20	6.10	
Q4 2016	155	1000	61	36.11	31.2	30.11	6.7	26	21.88	1.67	6.50	
Q1 2017	156	1012	66	37.07	30.0	31.00	8.1	31	22.34	2.03	6.40	

```
df2.stack()
```

		Income Statement		Price Ratios	
		Net Profit	Net Sales	Price	Price to earnings ratio (P/E)
	Company				
Q1 2016	**Facebook**	0.80	2.60	155	37.10
	Google	5.43	20.00	955	32.00
	Microsoft	4.56	18.70	66	30.31
Q2 2016	**Facebook**	0.97	3.10	150	36.98
	Google	5.89	22.00	987	31.30
	Microsoft	5.10	21.30	69	30.56
Q3 2016	**Facebook**	1.20	4.30	153	36.78
	Google	6.10	24.00	963	31.70
	Microsoft	5.43	21.45	62	30.46
Q4 2016	**Facebook**	1.67	6.70	155	36.11
	Google	6.50	26.00	1000	31.20
	Microsoft	5.89	21.88	61	30.11
Q1 2017	**Facebook**	2.03	8.10	156	37.07

```
df2.stack(level=0)
```

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	Company	Net Profit			Net Sales			Price			Price to earning (P/E)	
		Facebook	Google	Microsoft	Facebook	Google	Microsoft	Facebook	Google	Microsoft	Facebook	Googl
Q1 2016	Income Statement	0.80	5.43	4.56	2.6	20.0	18.70	NaN	NaN	NaN	NaN	Nal
	Price Ratios	NaN	NaN	NaN	NaN	NaN	NaN	155.0	955.0	66.0	37.10	32.
Q2 2016	Income Statement	0.97	5.89	5.10	3.1	22.0	21.30	NaN	NaN	NaN	NaN	Nal

```
df2.stack(level=1)
```

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	Company	Income Statement			Price Ratios		
		Facebook	Google	Microsoft	Facebook	Google	Microsoft
Q1 2016	Net Profit	0.80	5.43	4.56	NaN	NaN	NaN
	Net Sales	2.60	20.00	18.70	NaN	NaN	NaN
	Price	NaN	NaN	NaN	155.00	955.0	66.00
	Price to earnings ratio (P/E)	NaN	NaN	NaN	37.10	32.0	30.31
Q2	Net Profit	0.97	5.89	5.10	NaN	NaN	NaN

```
df2.stack(level=2)
```

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		Income Statement		Price Ratios	
		Net Profit	Net Sales	Price	Price to earnings ratio (P/E)
	Company				
Q1 2016	Facebook	0.80	2.60	155	37.10
	Microsoft	4.56	18.70	66	30.31
Q2 2016	Facebook	0.97	3.10	150	36.98
	Google	5.89	22.00	987	31.30
	Microsoft	5.10	21.30	69	30.56
Q3 2016	Facebook	1.20	4.30	153	36.78
	Google	6.10	24.00	963	31.70
	Microsoft	5.43	21.45	62	30.46
Q4 2016	Facebook	1.67	6.70	155	36.11
	Google	6.50	26.00	1000	31.20
	Microsoft	5.89	21.88	61	30.11
Q1 2017	Facebook	2.03	8.10	156	37.07
	Google	6.40	31.00	1012	30.00
	Microsoft	6.09	22.34	66	31.00