Report on "Market Dynamics when Participants Rely on Relative Valuation" by Sean M. Lavelle

The paper deals with implications of relative valuation as an asset valuation rule. It is claimed in the paper that wide-spread use of relative valuation by market participants can be destabilizing and the market can be over or undervalued.

Relative valuation is an asset pricing technique in which the value of an asset is estimated by comparing the valuations of peer companies vis-à-vis a selected fundamental or factor. For instance, if the ratio of market value to operating income (or any other selected factor) for an average peer company is two then the market value of the asset at hand is also estimated to be two times its operating income. This is one of the common asset valuation techniques used by practitioners. I find it interesting to understand the implications of this technique on market dynamics. Thus, I believe that the paper deals with an important question. Yet, answering to this question is not simple and there are several problems in the model offered in the current paper.

To summarize the model offered in the paper, there are randomly generated *initial* multiples (M_f) and fixed factor values for each firm(I_f) such that they imply an asset price: $P_f = M_f \times I_f$. Once the initial valuations are calculated there is nothing stochastic in the model, new multiples (relative valuation ratios) are generated in an iterative fashion until they converge. Then the price dynamics on the path to the point of convergence is analyzed, especially with regards to the initial conditions.

Investors' use of relative valuation is not justified

In the model laid out by the author, the investors use the relative valuation technique as their only asset valuation criteria. However, investors' use of this technique is not justified in the model. They are *irrationally* using this method. The author cite Grossman and Stiglitz (1980) as a way to justify investors' choice, yet it is not modeled. Moreover, it is "assumed that all firms were appropriately valued in time t=0, every firm is now misvalued at the end of the simulation." So, the initial prices are correct and there is no rational explanation to apply the relative valuation and when it is applied the resulting valuations are not correct. This is not only unsurprising but also uninformative. Were there other type of investors for instance, such as arbitrageurs or more-informed investors who do not use the relative valuation, then it would make sense for 'naïve investors' to use the relative valuation to learn from market prices.

Other issues

a) The terms *under-valued* and *over-valued* are used often in the paper, but the reference valuations are never specified. This is especially confusing given that the initial valuations are assumed to be correct[1].

b) The way multiples are iterated is arbitrary. To be clear, the multiple for a firm is never set equal to that of peer firms. They were rather adjusted slowly over time as specified in equations 3 and 5. This arbitrary mechanism generates a time-varying average multiple (M_c). If we skip this arbitrary adjustment and set the new multiple for a firm as the average of remaining firms, the average multiple in the market would be constant as I show in Table 1.

Table 1: Constant M_c

	M_f at t	M_f at t+1
Firm 1	a	$\frac{b+c}{2}$
Firm 2	b	$\frac{a+c}{2}$
Firm 3	c	$\frac{a+b}{2}$
Average Multiple (M_c)	$\frac{a+b+c}{3}$	$\frac{a+b+c}{3}$

References

[1] Grossman, S. J., & Stiglitz, J. E. (1980). On the impossibility of informationally efficient markets. *The American Economic Review*, 70(3), 393-408.

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[1]See the explanation for last step of simulation and the paragraph below Figure 1.