Applying the inelastic market hypothesis to active and passive managed funds and predicting price movements

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Executive Summary

In this thesis I investigate the inelastic market hypothesis by Gabaix and Koijen (2021), henceforth G&K. They hypothesize that, due to constrained market participants, price elasticity of demand of stock prices is smaller than commonly assumed. The consequence is that inflow and outflow in and out of the stock market have a massive price impact. Mainstream models assume asset demand to be highly elastic. In this case small changes in prices lead to a large change in demand but changes in demand would not change price by much. In those models the price is the direct result of discounted future cash flows or dividends. Market movement would only impact the prices in a small way and only short term. Arbitrageurs would instantly profit from these mispricings and thus rebalance the market.

G&K propose a fundamentally different approach. They argue that the market is inelastic. The main driving force behind this are the constraints laid upon a large share of market participants. Those institution are subject to a multitude of regulations, most importantly their fixed equity share. This mandate on equity share creates additional market forces that result in this extreme price reaction. G&K make the key distinction between micro and macroeconomic elasticity. They specifically focus on the macroeconomic price elasticity that concerns the inflow of money into the stock market from outside the stock market. This is in contrast to microeconomic elasticity that is concerned with the price elasticity stemming from movements within the stock market. They find the price impact multiplier M to be around 5. This implies that a 1\$ inflow into the stock market increases the aggregated value of the stock market by around 5\$. This result is remarkable and would have severe impact into the fundamentals of asset pricing and the whole financial sector. It would help explain the pseudo-random behaviour of asset prices. It would also allow governments to adapt their quantitative easing approach and influence the markets more directly through stock purchase rather than through bonds.

I critically discuss all the theoretical reasons given by G&K and combine it with existing literature on this topic. I especially focus on non-linear and asymmetric extensions as well as the micro foundation of these market forces.

In my empirical part I use proprietary Swiss and US mutual funds data provided by Morningstar.

The data ranges over the last 30 years. The aim is to both theoretically discuss G&K's inelastic market hypothesis, compare it to existing literature and expand on it, as well as empirically investigate the relationship between flow and price and estimate the price elasticity of demand.

For this I estimate multiple statistical models such as the Granular Instrumental Variable approach GIV by Gabaix and Koijen (2020), Difference-in-Difference, Panel VAR and Fixed Effects regressions, to try and capture the causal impact of stock market flow on price. This allows me to extract as much information as possible out of this dataset and also to check the robustness of the results. By using a variety of statistical models I am able to compare the results of G&K's GIV approach to the results of the other models. If the results are similar then this speaks to the validity of their approach.

One important aspect to my empirical analysis comes from the Swiss tax holiday around the year 2000. Around that time the Swiss government switched the taxation system and this resulted in a tax holiday for all Swiss cantons. The assumption is that some of the money not spent on taxes was invested into the stock market. Thus I use this event as a source of exogenous impact on stock volume that is not connected to price. This allows me to make use of an instrumental variable approach as well as providing me with the theoretical foundation for the Diff-in-Diff analysis.

I find that the combined result of my models supports the inelastic market hypothesis. The price impact multiplier M is of similar magnitude as found by G&K. It varies between 1 and 9 depending on model and data range, implying the market to be inelastic. With the GIV model I find $M = 5$, which is precisely the value G&K reported as well. I further expand on their results and find the impact of flow on prices to be decreasing as flow increases in size. This can be theoretically explained as laid out in this thesis. This indicates that the macro elasticity of demand is more complex than initially assumed. The results are promising and encourage further investigations into this topic, both theoretically as well as empirically.