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The engineering of stock market indices: winners and losers

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ABSTRACT
Stock market indices are among the important figures that are followed in the trading rooms: on the movements of the Dow Jones or the S&P 500 depends the allocation of billions of dollars. At the same time, for the companies that produce and publish them, but also for those whose shares are included in them, they represent a significant source of visibility – and therefore of income. Based on an ethnographic survey at the Brussels stock exchange, this article documents how the different financial actors – aware of the performativity of stock market indices – try to impact their shape. The divergent opinions and interests of these actors are the source of methodological tensions at the heart of these numbers. Through the methods of calculation and selection chosen, the engineers of the indices make perilous trade-offs with far-reaching consequences. By exposing the cognitive and political debates that these indicators crystallise, this article also highlights the unequal representation of the various stakeholders within these statistics. This type of inequality, veiled by the numerical formatting, often goes under the radar of social scientists.

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Finance; stock market; measurement; ethnography; performativity

Introduction

The Dow Jones, the S&P 500, and a few other stock market indices are among the most visible figures in the world. Some TV channels broadcast the evolutions of these indices permanently and many actors – journalists, financial analysts, or readers of the press – refer to them to know the 'state of the market'. As is often the case, the inner workings of these indicators remain mostly out of reach of their daily users. More surprising is that, despite their centrality, and unlike other indicators such as GDP, stock market indices have so far been the subject of only a few historical studies.[1] If some sociological analyses have already alerted us to the social anchoring of this type of indicator, we still need to uncover the modalities of this 'social construction': which actors aspire to influence the constitution of stock market indices? Why do they want to do so? And how do they go about it? By providing some answers to these questions, this article offers a first insight into the contemporary shaping of stock market indices.

The engineering of stock market indices deserves a sociological investigation because it is not self-evident: there are different statistically valid ways to build these indicators. And several actors aspire to establish them one way rather than another. Why are they interested in the shaping of stock market indices? To take advantage of their power. Indeed, rather than mere reflections, these indicators leave their mark on different parts of the social world in three ways. First, they act as representatives of 'the market': since the advent of 'passive management' (explained below), asset managers seeking a diversified portfolio acquire the stocks in the index – which causes

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price movements whenever its composition changes (Lynch and Mendenhall 1997). Second, stock market indices are salient in the coordination effort of financial actors: they inform of an economic situation, but also of the reaction of their peers to this situation (Duterme 2022). This explains why they give rise to phenomena that are difficult for a classical economist to understand, such as ‘roundophobia’: when an important index approaches a symbolic threshold (such as the 30,000 price for the Dow Jones), its growth tends to stagnate, so that the threshold is not crossed (Cyree et al. 1999). Knowing that everyone is watching the index and expecting this phenomenon, the trader has an incentive to sell before the price weakens, thus feeding the ‘roundophobia’. Third, they offer the companies that produce and publish them, but also those whose shares are included in them, tremendous visibility in the financial world and beyond. These three effects – which do not, however, as we shall see in the conclusion, exhaust the performativity[2] of stock market indices – make these statistics and their methodology of major interest to several actors.

The ambition of this article is therefore to grasp the struggles between these actors interested in the performativities of stock market indices: all of them want to orient the engineering of indices in a certain way in order to modify their effects in the direction of their interests. By joining the themes of performativity and indicator construction, our perspective is *de facto* at the crossroads of two research traditions: the sociology of quantification and the social studies of finance. The former, in particular its conventionalist branch studying the shaping of numbers (Diaz-Bone & Didier 2016; Berman and Hirschman 2018), traces the cognitive and political debates around methodological choices, while the latter accounts for the effects, often unforeseen or even contrary to the intentions of the designers (‘counter-performative’), that certain indicators produce throughout their social life – including their dissemination, contestation, reappropriation, and so on. It seems fruitful here to cross these two perspectives because the stock market index has the particularity of being performative without being fully stabilised.[3] Powerful *and* contestable, it opens up a space of struggle between different actors who want to shape it in order to benefit from its effects.

To expose these conflicts at the heart of contemporary stock market indices, we rely on an ethnographic survey conducted in the offices of a company producing such indices. At present, most of stock indices are produced by a handful of financial companies, such as *CME Group* (the largest derivatives exchange) and *S&P Global* (producer of the famous credit ratings), which together own the Dow Jones and the S&P 500. In Europe, *Euronext* dominates this special market. Created by the merger of the Brussels, Paris, and Amsterdam stock exchanges (to which were added those of Dublin, Oslo, and Lisbon, as well as a part of the London stock exchange), the company inherited the ‘flagship indices’ of the different markets: the CAC 40 (Paris), the BEL 20 (Brussels), the AEX (Amsterdam), the PSI 20 (Lisbon), and the ISEQ 20 (Dublin). We conducted our research in the Brussels offices of *Euronext* between March 2019 and April 2020. The empirical material has been combined with eight semi-structured interviews with staff members and a qualitative analysis of documents. This fieldwork allowed us to identify the main issues at stake in the ‘methodological struggle’ between the different actors involved: these issues emerged through *tests* during which the index was torn between two incompatible claims. Some discomfort in interviews, for example, pointed to tensions that *Euronext*’s index engineers are currently facing (or have faced in the past). By digging into these tensions, we arrived at the ‘dilemmas’ presented in the body of the text.

The rest of the article is structured by these six dilemmas. With each, two opinions on what the index should be (and do) clash, a struggle that is reflected – if we pay attention – in the current methodological orientation. This investigation will lead us to denaturalise the shape of contemporary indices: no longer a logical component, but the arbiter between the claims of different financial actors. It will also remind us of the winners who are crowned by the current shape of indices, as well as the losers who are relegated to invisibility. This unequal representation of the various stakeholders constitutes a type of inequality which, veiled by numerical formatting, often passes under the radar of social scientists and which this article allows us to problematise again. From this point on, the methodological issue regains its political nature and the shaping of stock market indices can again become a subject of debate. In conclusion, in order to bring some elements of

discussion to this debate, we will put the *Euronext* indices into perspective with respect to some of their ancestors and of their American competitors. These alternative shapes will provide points of reference for assessing the 'performance' of stock market indices – no longer in the sense of profitability, but in terms of democratic implications and effects on financial stability.

The six tensions at the heart of stock market indices

Barometer vs instrument

We have argued that indices affect the behaviour of asset managers. But where does this performativity come from? Aren't indices simply a weighted average of the prices of a sample of stocks? Formally, yes. In fact, at the beginning of the twentieth century, several macroeconomists constructed them for this purpose: for example, the stock market index contributes, as a witness of the evolution of an economic sector, to the famous 'three-curve barometer' of Warren M. Persons (1919). For the stock market players, these indices were only one of many points of attention. In the 1970s, however, their status was about to change. Financial economics is intimately associated with this evolution: after having established that in view of the Brownian movement of prices, no investor could, on average, obtain a better return than 'the market', financial theorists needed a representative of this poorly defined object that would allow them to test their theory. Indices were therefore set up as official representatives of 'the market', as ultimate benchmarks against which the performance of any fund manager was assessed. A large part of stock market savings was then invested according to the precepts of financial theory, that is by 'passive management' (buy and hold a representative index). Even 'active' managers, eager to showcase their expertise, were encouraged to copy the index:

> if, as was increasingly the case, a manager's performance was judged relative to an index such as the S&P 500, then there was some safety in selecting a portfolio that closely resembled the makeup of the index. (…) It greatly lessened the chances of a career-killing relative underperformance: if one's portfolio did badly, those of other managers would most likely be doing badly too, so the fault would be seen to lie with the market, not the manager. (MacKenzie 2006, p. 86)

Favoured by this popularity, a second turning point reinforced the centrality of indices: the construction, in the 1980s, of derivative products based on these indicators. After an intense formatting process (Millo 2007), index futures and options were created and became popular investment instruments.[4] The value of the indices became the 'source' of the price of other products. Henceforth, the evolution of the stock market index was no longer a point of attention among others but constituted at the same time the benchmark of profitability and the underlying of other very active markets. Of course, these new powers favoured its advent as an inescapable informational device: no one could ignore their evolution anymore (and everyone knew it!).

But this evolution also introduced a tension at the heart of all contemporary stock market indices, about which the economist Pascal Gobry tried to alert us: 'but when the object of measurement that is the stock market index, which was initially intended to remain perfectly neutral, becomes part of portfolio strategies, anything can happen' (Gobry 1990, p. 7). More concretely, can the economic barometer become a financial instrument without 'reinvestment in forms' (Thévenot 1986)? In other words, was the original methodology of stock market indices already adapted to the requirements of commodification? The answer is no. This is the first tension at the heart of contemporary stock market indices – the most technical, but also the most fundamental.

All synthetic economic indicators face an unsurpassable trade-off between consistency and up-to-dateness. On the one hand, to make two periods comparable, the index must 'talk about the same thing', that is keep the same sample. On the other hand, to be connected to the present, it must 'move with the times', that is update the sample.[5] Before being used in the construction of derivatives, stock market indices performed this arbitrage by postponing – neither too often nor too little – the base year: from one day to the next, the index fell back to a standard value (e.g. 1000),

associated with a new sample. More precisely, it was therefore a matter of adding up the prices of the selected shares (possibly weighted by the number of shares issued) and dividing them to obtain the standard value. Thus, for example, the numerator of the first BEL 20 was worth 7,501,050 Belgian francs and its *ad hoc* denominator was 7501.5, so as to start this new period with the standard value of 1000. Then, throughout this period (i.e. until the next adjournment), this denominator was the guarantor of temporal coherence and therefore immutable. This secular technique proved to be incompatible with index-based derivatives: options and futures whose value depended on that of the index could not see their price fall overnight following a decision to update the sample! But at the same time, it is still necessary to periodically modify this sample, if only when a company disappears (following a takeover bid for example). How did *Euronext* resolve this first dilemma between historical consistency and financial formatting?

Unambiguously in favour of the latter. The denominator, symbol of consistency within a period, will be sacrificed: at each revision of the sample (now annual!), 'the divisor is adapted in such a way that the value of the index remains the same after the adjustment' (The Brussels stock exchange 1995, p. 41). If, for example, on the Friday evening of the revision, value A leaves the index, while value B enters it, so that BEL $20^{old} = 765$, A = 50, B = 350 and the other 19 values are all equal to 400, the divisor (which was therefore 10) will become equal to 10.39 so that BEL 20^{new} = BEL $20^{old} = 765$.

$$\frac{19*400+50}{10}=\frac{19*400+350}{x}$$

$$765=\frac{7950}{x}$$

$$x\approx 10.39$$

Numerical continuity thus eclipses historical consistency: the barometer lives only one year, but the instrument becomes eternal. To ensure that this change in the sample does not disturb investors, *Euronext* also makes it coincide with a 'quadruple witching day' (the third Friday of March, June, September, and December when several index and stock futures contracts expire): the revision of the BEL 20 takes place in March, that of the CAC 40 in September. Finally, on the discursive level, the rupture is also smoothed out: one evokes a 'modification of its composition', rather than a 'new index': '[the CEO of *Euronext Brussels*] never links the BEL 20 to a precise year. He rather describes it as the 'BEL 20 composition March 2019'' (de Crombrugghe de Picquendaele 2020, p. 54). Therefore, this first dilemma does not really exist anymore. The financiers have prevailed over the historians: 'the financial community attaches a lot of importance of this stability which increases the credibility of the index' (The Brussels stock exchange 1995, p. 42).

Transparency vs privacy

Financial actors have not been the only ones attracted by the power acquired by stock market indices. It has also led public authorities to take an interest in them, particularly after the *London Interbank Offered Rate* (Libor) scandal.[6] In order to ensure greater transparency, the European Parliament notably decided to establish 'a common framework to ensure the accuracy and integrity of indices used as benchmarks in financial instruments and financial contracts, or to measure the performance of investment funds in the Union' (OJ L 171, 29.6.2016, p. 12). In this context, *Euronext* published various documents on its decision-making bodies and their respective composition and function. In order to guarantee the neutrality of its stock market indices and 'mitigate potential conflicts of interest' (Euronext 2020a, p. 5), a certain separation of powers is established between a body that ensures the day-to-day management of the indices ('Operational Governance') and one that independently supervises the activities of the former ('External Committees'). This system is

reaffirmed on the first page of the factsheets of the main national indices: 'Transparency. The index rules, that are available on our website, are overseen by the independent BEL Steering committee that acts as Supervisor' – and for the CAC 40: '(…) by the independent Conseil Scientifique that acts as Supervisor'. Our ethnographic survey shows that these claims should be at least qualified. To understand this, let us retrace how this internal control, which guarantees the transparency of the indices, manifests itself in practice.

The governance rules for the indices are above all reflected in a geographical distance: at the time of the annual review, the 'Index team' (part of Operational Governance), based in the *La Défense* district in Paris, sends its figures to the national offices, which are responsible for approving and publishing them. More concretely, the Index team draws up a descending ranking of the companies listed on the *Euronext* market concerned (Brussels for the BEL 20, Paris for the CAC 40, etc.) according to their free float capitalisation and velocity.[7] This ranking reaches the supervisors making up the External Committee – called the 'Steering Committee' in the Brussels offices – who are responsible for sanctioning the results: in principle, the first twenty (BEL 20, PSI 20, ISEQ 20), twenty-five (AEX) or forty (CAC 40) companies then make up the new index. This description, although more concrete than the compliance statements, remains rather disembodied. Who makes up these different bodies, in particular this Steering Committee? How is a change in criteria decided? Where can we find the data of the companies involved (free float, velocity, etc.)? It was difficult, and sometimes impossible, to obtain answers to these seemingly inappropriate questions. An employee attending the Steering Committee meetings told me that he 'did not want to go into details', while the CEO of *Euronext Brussels* reminded us of the absurdity of humanising these automatic processes: 'we receive the results of the calculations and we approve them … There are never any interpretations' (interview). However, as we will discover later, decisions are indeed taken by the humans who make up these bodies.

Thus, contrary to the stated ambitions of transparency, the published methodology is lapidary, the data partial, and the composition of the decision-making bodies confidential.[8] Even financial journalists, the main contributors to the popularity of the indices, are deprived of valuable information:

> I try to stay ahead of the Brussels stock exchange [by predicting incoming and outgoing companies before the official announcement of the revision]. But it's getting harder and harder to do that, because I used to get data that I don't get anymore, so … I can find the free float because Bloomberg gives it, but the velocity … I don't have that data anymore … So, it hinders my estimates, it handicaps me. (interview with a journalist from L'Écho).

Perhaps even more surprisingly, this same journalist has already been gently discouraged from publishing on the BEL 20 methodology:

– *Have you ever written an article about the methods of the BEL 20?*
– Journalist:

> *Yes yes yes, even several. I must have done some … five, six years ago. And I know I did it two, three times. Even when I phoned [the CEO] … (because it's not always easy to master this), he said to me: 'but … you're still doing an article on the BEL 20 rules?' [annoyed Brussels accent] (…). He was surprised because he thought that once was enough.*

Why these deviations from the requirement for transparency? Probably for many reasons: *Euronext* does not want to be pre-empted by a mischievous journalist during the official announcement of the revision, the CEO prefers to avoid too much talk about the internal workings of the BEL 20, the members of the Index Team are too busy to answer questions from a sociologist … The point here is not to suggest a well-crafted plot, but rather to point out the tension between a demand for transparency, recently defined by European law and – at least in principle – supported by the users/clients of the indices, and the discretion allowed by the status of their owner (*CME Group*, *S&P Global* or *Euronext*) as a limited company. Apart from formal compliance with legal requirements, *Euronext* is not accountable for its internal cooking, and for good reason: 'Euronext owns all intellectual and other property rights to the index, including the name, the composition and the

calculation of the index. BEL®, BEL 20®, BEL Mid® and BEL Small® are registered trademarks of Euronext' (Euronext 2020b, p. 5). But is this so problematic? Why should we ask for reports of the Steering Committee meetings if nothing is decided there? This is the stake of the third dilemma.

Objectivity vs subjectivity

The limited company *Euronext* indeed does not make any decisions. But some humans, acting as its spokespeople, do. And it is sometimes very costly for them to get behind the discourse of impersonal objectivity, because they too – like the financial actors – would like to benefit from the success of stock market indices. Yet this discourse is vital: it is the one that must guarantee the consistency of these statistics, whose impartiality is a condition for their performativity. And many people have understood this, like the head of communications at *Euronext*: 'It is based on very strict rules. There is no 'human' appreciation, in quotation marks, that makes a person say: "oh, we would prefer to have this company in the BEL 20". The choice is made purely on the basis of figures' (interview). Financial journalists, who never stray far from *Euronext*'s promotional discourse, also make their contribution to the edifice: by abundantly relaying the evolutions of the index (the main Belgian financial newspaper, for example, mentions the BEL 20 in more than 30,000 articles), they stabilise this statistical object in the media landscape. This objectivity, understood as independence from personal judgments, thus renders all the humans who make up the index production chain insignificant; the Steering Committee, like all the teams that preceded it (the Index Team in particular), becomes, at best, a verifier of algorithms, a robot assistant.

This unrewarding status is therefore the cost of this 'investment in forms' (Thévenot 1986) which guarantees the objectivity of the stock market index. While most *Euronext* employees comply, there is resistance, particularly as one moves up the hierarchical ladder. Many managers have invested too much in the shaping of the indices to remain silent. At the same time, they are often too familiar with the events that are not covered by the 'narrative of objectivity' (bad decisions, strategic reversals, impulse, etc.) to forget them. By making the subjectivity of the index reappear, their proud testimonies are in dissonance with the discourse of objectivity and can even undermine it. Thus, for example, the CEO of *Euronext Brussels* was unable to downplay what the contemporary BEL 20 owes him:

– *So, you were the one who initially adapted the weighting to the forward lots?*[9]

– CEO:

> *Always. I did everything. I have always adapted everything. I have always managed the BEL 20, since the beginning. I have done everything …*

How to reconcile objectivity and this sense of paternity? How to ensure arithmetical impartiality of the indices while doing justice to the historical role of their architects? It seems that a temporal differentiation generally allows this *tour de force*: for example, it is permitted to judge *yesterday*'s BEL 20 and even to celebrate or condemn its actors. The consistency of these deceased figures is no longer important; no transaction is based on their reputation. This privilege of historical hindsight is well known: once the tension has been released and the conflicts have subsided, tongues are loosened. But subjectivity often spills over from the past, as architects are unable to stifle their contemporary and even future decision-making power: 'we could, in the coming years, also base the velocity criterion on the BEL 20 [i.e. an indexation similar to that of floating capitalisation]; I am not saying we will do it, but we could' (interview with the CEO of *Euronext Brussels*). Index engineers are not just verifiers of algorithms. They control the robot and sometimes want to say so – at the risk of undermining the objectivity of their progeny.

Companies vs traders

The methodological adjustments introduced by the Brussels CEO are undoubtedly astute. But if they were adopted by the majority of the other *Euronext* indices, it is because they corresponded

to a logic of action that went beyond the Belgian case. Most often, these amendments had to respond to the desires of a client. Today's stock exchanges have to attract two main types of customers (on which their commissions depend): the listed companies ('the demand for capital') and the traders active on their platform ('the supply'). However, these two players do not see the index in the same way: 'we had a Steering with members … It was difficult because there were conflicts of interest … there were some who had clients … and pressure each time from the companies who said: 'why aren't there 25?' and the traders: 'why aren't there 10?'' (interview with the CEO). The interest of the companies is easy to understand: the more permissive the index is (less demanding criteria allowing, for example, more than 20 stocks to be included in the BEL 20), the more likely they are to be included. And a national stock market index is an important calling card: 'When companies go to London, they are asked for their capi[talisation], etc. And if they can show that they are in the BEL 20, doors open' (interview with the CEO).

The interest of traders, these professionals who conclude numerous transactions for their own account and/or that of their clients, is a little more technical: as we have seen, the stock market index is for them a benchmark against which their performance is evaluated (by them and their clients). They therefore generally wish to hedge the securities that make up the benchmark, that is to amortise a potential decline in a given security by buying, for example, a put option (allowing them to sell a security at a predetermined price and date). The more securities in the benchmark, the more expensive it is to hedge the entire index. At the same time, the less liquid the securities in the index are (i.e. the more expensive it is to find a counterparty for these securities), the less easy it is to hedge all the securities. Finally, the trader is in search of stability: 'we should not move too much, because the guy who covers the 20 stocks … at each change, he has to sell and buy, but that does not bring him anything … So traders asked us for few securities, liquidity, and few changes' (interview with the CEO).

Several characteristics of the *Euronext* indices stem from this demand for stability. Firstly, the stock market indices no longer suffer from ruptures in valuation similar to those endured by their ancestors when they changed their basis (cf. above). Secondly, the selection criteria for entering the index are generally relaxed for stocks already included in the index (for example, a velocity of 25% is required to enter the AEX, but only 10% to remain in it). Thirdly, the CEO of *Euronext Brussels* has decided to base the capitalisation criterion to the index itself (a free float capitalisation of 300,000 times the value of the BEL 20 is required to enter the index, 200,000 to stay); during a generalised fall in prices, this criterion – as opposed to an absolute floor – adapts (as the index also falls) and most stocks will be retained. These three factors contribute, in the interest of traders, to stabilised the stock market index.

Why did the shaping of the *Euronext* indices in general, and the BEL 20 in particular, follow the interests of traders rather than those of companies? One partial but convincing answer lies in the structure of the 'market of markets': from the end of the 1980s onwards, national stock exchanges competed with each other to attract, above all, savings managers whose opportunities to relocate were (perceived to be) more threatening than those of the companies issuing securities. Thus, in the Belgian case, the creation of the BEL 20 went hand in hand with the creation of a new futures and options market (*Belfox*), which was intended to make the Brussels stock exchange more competitive in the eyes of investors.[10] It is true that the enlargement of the Belgian financial centre, engendered by the integration of index-based derivatives, was also in the interest of the exchange itself – which surely supported traders' demand for a stable index. But this alignment of interests is not enough. In particular, it no longer holds on the number of stocks included: the modernisation of the Belgian stock exchange would have been possible with 40 stocks rather than 20, as illustrated by the French case.

It is precisely this issue of the struggle between traders and companies that is at the heart of a famous episode in the history of the BEL 20: the 'Lefebvre affair'. In December 2004, Olivier Lefebvre, who headed the Brussels stock exchange from 1995 to 2007, decided to increase the liquidity of the BEL 20 by tightening the selection criteria: the required free float capitalisation had to exceed 500,000 times the index value. Five BEL 20 stocks did not comply with this new measure

and therefore had to leave the BEL 20. The current CEO remembers that he tried to dissuade Lefebvre, warning him of the wrath this decision would bring: 'and I said at the meeting: "Listen, you, you take Baron Buysse on the phone! It's not going to be easy"'. Paul Buysse was then Chairman of the Board of *Bekaert*, one of the five companies threatened.

Two days after the announcement, 'big fuss, Buysse, television, etc., we went to see Barco, Omega Pharma … [other companies in the hot seat] Bekaert did not want to see us … Well, fine … (…) Buysse went to see Théodore in Paris [Jean-François Théodore, then director of *Euronext*], because he did not want to talk to us … ' (interview with the CEO). In the press too, the tension between companies and traders is in full swing: an ING operator believed that 'this measure will allow the Bel 20 to gain in coherence', while an anonymous 'market participant' made the opposite argument:

> the stock market (…) must allow the financing of companies and facilitate their growth. It is certain that removing companies from the Bel 20 index means removing their visibility and a certain international credibility. These companies disappear from the radar of institutional investors, which will not facilitate their financing (…). Euronext is no longer a public company that seeks to develop the European capital market, but is above all a private company that must grow its profits. (quoted in L'Écho 2004)

This battle was won by the 'companies camp', supported by media coverage of the event, as well as by the resonance of figures like Paul Buysse. 'We came back saying: "well, it's still not a very good idea, let's cancel it, we're not going to do it on January 1"' (interview with the CEO). When, two years earlier, *Bekaert* was already questioning the selection criteria of the index, Olivier Lefebvre explained himself in the pages of *L'Écho*, exposing better than ever the tension between companies and traders:

> Managing an index is a difficult art. We are constantly faced with contradictory demands. If we listened to institutional investors, we would probably have a BEL 5 because these investors are obsessed with liquidity. If we listen to issuers, we would need a BEL 30 or BEL 35 in order to have a greater representation of the Belgian economy (…). Should the rules be reviewed? Yes (…). But let's also be careful. Let's avoid any tinkering, because that would scare away investors. (L'Écho 2002).

The potential mobility of investors thus still gives them an advantage over the rigidity of corporate infrastructures. And this can be seen in the *Euronext* indices.

National vs global

The different dimensions of the performativity of the indices give them a privileged status and attract the covetousness of researchers, traders, *Euronext* directors, companies, and public authorities. Privileged status, but not monopolistic. However powerful it may be, the index is involved in dynamics that are independent of its performativity, driven by other logics, and which may even threaten it. This is the case with the concentration of stock exchanges. When *Euronext* was created in 2000, all the national indices survived because the exchanges did not merge completely: the order book of the Brussels stock exchange (determining the BEL 20) remained separate from that of Paris (location of the CAC 40). But in January 2009, two years after the merger between *Euronext* and the New York Stock Exchange (NYSE)[11], the unification of order books was adopted ('Central Order Book'): from then on, a company listed on two different exchanges (Paris and Brussels, for example) would only display one price (L'Écho 2009).

This homogenisation was of course intended to increase the liquidity of the *NYSE-Euronext* global market: since buy and sell orders from Amsterdam, Paris, or Lisbon are centralised in a single 'order book', a seller will have a better chance of finding a buyer (and vice versa). But at the same time, this unification weakens even more the territorial anchoring of the transaction systems. *Euronext* is now only a financial platform, supplanting the national exchanges. This trend towards globalisation (rather than internationalisation) does not spare national stock market indices, especially those attached to a 'small' market: by delocalising finance, it makes any anchoring absurd.[12] By unifying markets, it prepares for the advent of a single '*Euronext* index' (if the main New York stocks

are found on all the markets that are members of *NYSE-Euronext*, they alone will make up all the indices attached to smaller exchanges).

But this logic is not hegemonic: it meets resistance from 're-nationalising' dynamics, notably on the part of *Euronext* itself, which wants to keep its five major national indices in Europe. To this end, in parallel with the adoption of the Central Order Book, the concept of the 'reference market' appeared: when a company is listed on *Euronext*, its shares can be bought and sold at a single price by investors from all member countries, but – at the same time – this company affiliates itself to a particular national stock exchange (its 'reference market'). A new selection criterion was therefore adopted in order to save the national character of the BEL 20 (or the CAC 40): having *Euronext Brussels* (or *Paris*) as the reference market. In the Belgian case, however, this compromise did not stifle the national/global tension: the country's economic system is populated by foreign companies (which have often opted for a foreign 'reference market'), and it may appear costly to ignore these players. This was the view of the Steering Committee: 'we were not satisfied with the resulting sample, which was no longer representative of the Belgian market' (interview with CEO). As a result, the reference market criterion was initially supplemented by three others relating to the national anchoring of the company (balance sheet assets, head office activities and staff employed, as reported *in* Euronext 2015). Only the last criterion was finally retained:

> Eligible companies are: I. Companies with Euronext Brussels as Market of Reference; and II. Current constituent companies with a Market of Reference other than Euronext Brussels (…) as long as their staff in Belgium represents at least 15% of the consolidated group staff. (Euronext 2020b)

Today, two companies are part of the BEL 20 with *Euronext Amsterdam* as reference market; the other 18 are associated with the Brussels stock exchange.

The tension has not disappeared, however, and it is common for a spokesperson from one of the poles to reignite the debate. For example, in a 2017 article, a journalist from *L'Écho* expressed concern about the entry of many international stocks on the Brussels stock exchange:

> One wonders whether the Bel 20 is not becoming more of an international index (with Engie, ING, Ahold Delhaize, AB InBev …) than a purely national one. If all the Aperam & Co. of this world ask for a listing in Brussels in order to join the Bel 20, is there not a risk that the index will become even more distorted? Internationalisation is not serious in itself – Belgium is international – unless it has a crowding-out effect on Belgian companies seeking development and visibility. (Lambrechts 2017)

Two years later, two economists from the *Research Group for an Alternative Economic Strategy* proposed an 'alternative Bel 20' that questions the financial focus of the BEL 20 criteria, but also its national filtering: 'Belgium is a very open economy. Large foreign companies are present without having Brussels as their reference listing or at least 15% of their workforce in Belgium' (Bauraind and Van Keirsbilck 2019). Their alternative index, based on turnover, gross value added, and number of employees, now includes only eight Belgian companies and includes, among others, *Total*, *ArcelorMittal*, and *Janssen Pharma*. Where Lambrechts wants to see a promoter of Belgian capitalism, Bauraind and Van Keirsbilck aspire to a more accurate reflection of economic power in Belgium, which would be more capitalist than Belgian. The contemporary BEL 20 still hesitates between these two logics, but owes its survival to the resistance of the first.

Regulation vs marketing

The impact of indices, as benchmarks and underlying foundations for derivatives, on investor behaviour and therefore on prices is in many ways their main performativity – the one that attracts financial actors and public authorities. But we have seen that this dimension can be in tension with others, such as its effect on the ease of financing of companies included in the index. It can also conflict with the impact on the visibility and revenues of the company producing and publishing the index. Indeed, for *Euronext*, stock market indices are something else than a driver of stock market prices: a brand.

In the history of the BEL 20, this aspect was born when the Brussels stock exchange and its index were privatised. On its first day, the limited company that replaced the stockbrokers' cooperative invested 60 million Belgian francs in a promotional campaign entitled 'visibility, transparency and the general public'; its manager, Baudoin De Cannière, wanted to 'translate the democratic, open and friendly character of the product' (quoted *in* L'Écho 2000). In this new competitive context, the stock exchange was looking for new clients: 'hence the choice of a very popular campaign, very public. And indeed: the visual shows a blackboard announcing the 'promo' of the moment and holds the attention of two housewives with umbrella and poodle. We understood: the 'mini BEL 20' is for everyone' (Ibidem).

Since then, the BEL 20 – like other stock market indices – has not lost this commercial dimension. The head of communications at *Euronext Brussels* is particularly aware of the 'free publicity' it offers: 'We are fortunate that when we talk about the stock market in the media, we talk about the BEL 20. We have identified them: stock exchange = BEL 20 (…) It is the biggest brand that Euronext has put on the market' (interview). He therefore tries to make his annual review an *event*, in particular by stimulating the journalists of the financial press with a careful staging:

> the annual review is a moment that generates a lot of attention … of visibility. All the Belgian media and some abroad relay the information. (…) During the day, I say nothing to the media [who want to get a scoop], but, in return, at the end of the meeting [of the Steering Committee], we give the media who have insisted all day a moment of discussion with [the CEO]. (interview with the head of communications)

In the eyes of *Euronext*, the stock market index is therefore not an instrument for regulating stock market prices, but a marketing tool. The more it is mentioned in the media, the more visibility the company gains. Unfortunately, this advertising role is not always aligned with the regulatory function that the index could have through its impact on prices. This can be seen by discussing the financial crises with *Euronext* employees:

– *How did Euronext experience the crisis of 2007–2008?*
– *Euronext* employee:

> *Listen … it shook things up … Well, you know that the stock market is an operator, so uh … so we're a bit agnostic about crises. We just apply the rules that we always apply, that is to say that we have safeguards against price variations, things like that … (…) So, we continued to play our role as operator if you like. Well, with a volatility that was obviously much higher. Which incidentally also generated … (laughs) commissions … We didn't necessarily have a worse year in the year of the crisis, on the contrary, because well … whether you like it or not, that's how it works: in general, when there's a crisis, there's more activity, so we have more income (laughs).*

We will not develop here the issue, however normatively central, of remuneration by commission, but rather focus on the type of behaviour induced by *Euronext*'s 'agnosticism about crises'. In other words, the exchange does not take a position on financial crises, those critical moments when thousands of jobs depend on the regulators' ability to stabilise the market. All regulatory instruments are then mobilised: Central Bank interest rates, quantitative easing, budgetary support and government deposit guarantees, etc. But the stock market index will be agnostic. Its regulatory power will remain untapped. On the other hand, the over-visibilisation of stock market indices during these moments of panic when the stock market permanently occupies the media space certainly represents a success for the marketing department of *Euronext*. Moreover, we could argue, without really being able to attest it, that this massive and anxious relay of the fall of the index feeds – by mimicry or performativity – the sell orders of investors, both individuals and institutionals.

The price drop resulting from the coronavirus did not invalidate these three pillars of the regulation/marketing tension. Firstly, *Euronext* was not particularly concerned; the company did not consider appropriate to close the stock market (which many economists thought necessary) and the Brussels CEO explained that liquidity was 'very good' for the moment. Secondly, the stock market indices were mentioned more than ever: in addition to *L'Écho*, which reports the daily variations of the BEL 20, the entire general press of the country gave it a central importance: 'the biggest fall in

its history', 'historic fall', etc. Finally, the third pillar – accentuation of the crisis by media coverage – is difficult to verify, but even more difficult to deny: how can one imagine that savers, as well as professional intermediaries, are impervious to this intense diffusion? Once again, the point here is to highlight the dissonance between the importance of the stock market index as a marketing instrument and as a regulatory tool.

Discussion

The findings of this ethnographic survey, summarised in the Table 1 below, reveal the political nature of statistical construction: the shape of European stock market indices is not 'dictated by common sense', but marked by conflicts between actors with divergent interests. Denaturalised, this shape is no longer immune to the imperative of justification and can be questioned. Unlike other economic indicators such as the GDP, the stock market index has not yet been the subject of extensive debate. To conclude this article, we propose to put forward some guidelines that could be used for a potential discussion of stock market indices, based on a brief comparison – geographical (between *Euronext* indices and their main American rivals) and historical (with respect to their ancestors).

Firstly, from a heuristic point of view, we have seen that the *Euronext* indices, by making the denominator the adjustment variable, have responded to traders' demands for continuity, at the expense of historical consistency. Unsurprisingly, the major US indices that are at the source of much larger derivatives have adopted the same position:

> to assure that the index's value does not change when stocks are added or deleted, the divisor is adjusted to offset the change (…). [It thus] plays a critical role in the index's ability to provide a continuous measure of market valuation. (S&P Dow Jones Indices 2021, p. 5)

This option condemns indices to being able to represent only the variation in value of a portfolio – and imperfectly. The analytical ambition of their predecessors, both European and American, was quite different: indices were to be barometers, revealing the pulse of the situation and our position in economic cycles (Armatte 1992). When an adjustment of their sample was necessary to adequately represent the stock market sector, these indices fell back to a standard value (Wilson and Jones 2002, Duterme 2021a). The Dow Jones, in particular, was to remain an average of 20, then 30 stocks: 'while the editors had to acknowledge [the change], they desired to maintain the divisor at 20' (Stillman 1986, p. 58). At present, following successive adjustments, the denominator of the Dow is about 0.15 – the index no longer represents the average price of a sample of stocks. This first point does not call for a nostalgic return to indices that would be unusable in today's markets, but – perhaps – for their pluralisation: other indices, similar to those formerly calculated by the National

Table 1. The six dilemmas of stock market indices.

Dilemma	Source	Targeted performativity	Status	Dominant (dominated)
Barometer-instrument	Creation of index-based derivatives (80s)	Orientation of investor behaviour	Resolved	Traders (researchers)
Transparency-privacy	European legislation (2010s) and privatisation of exchanges (2000s)	Orientation of investor behaviour	Balanced	*Euronext* (public)
Objectivity-subjectivity	Birth of indices	Reputation	Balanced	CEO (other stakeholders)
Companies-traders	Competition between exchanges (90s)	Orientation of investor behaviour (funding facilitation)	Unbalanced	Traders (companies)
National-global	Concentration of exchanges (2000s)	/	Balanced	Big markets (little exchanges)
Regulation-marketing	Benchmarking (80s) and privatisation of exchanges (2000s)	Visibilisation of *Euronext*	Resolved	*Euronext* (public)

Statistical Institutes, can serve other audiences and capture other realities than the evolution of portfolio returns.

As far as the democratic issue is concerned, the *Euronext* indices have little to learn from their American rivals: although their methodological notes are more detailed, their decision-making process – about which companies to include and the selection criteria – is left ‘at the discretion of the Index Committee’ (eight occurrences in S&P Dow Jones Indices 2022), composed of company employees. Most of the old stock market indices were even less explicit about their inner workings, especially those produced by financial newspapers. However, as the Libor scandal strikingly reminded us, the identity of index engineers and the transparency of their operations are essential aspects to limit abuses such as market manipulation and insider trading. In this respect, stock market indices could take inspiration from other financial indicators which, because of the critical attention they have attracted, have been made more open. Consider, for example, credit ratings: following the debates about their role in the sovereign debt crisis, the main rating agencies have had to clarify their decision-making process, notably by publishing the mathematical models used. Moreover, initiatives have emerged to ensure greater representativeness in governance committees, both geographically, with the promotion of a European rating agency (Altdörfer et al. 2019), and socially, with the proposal for a ‘decentralised rating agency’ (Özdal 2022).

Finally, because of the importance they have acquired in the eyes of traders and asset managers, indices can be assessed by their impact on the stability of the financial system. We saw in the last of the six dilemmas that, at *Euronext*, the status of regulatory tools was dominated by the status of marketing instruments. Further study of the Dow Jones and the S&P 500 is needed to determine whether the US indices have anything to teach us on this point. But it is to be feared that the latter – like their predecessors – do not mobilise their political potential in the interest of price stability or fair valuation of companies. Once again, it seems that indices have to take inspiration from other financial indicators, which have more integrated their regulatory function, such as the key rates of central banks. While also constrained by an external reality that they must represent (the general state of the economy), these rates are designed to channel the behaviour of market actors towards a desirable scenario (Braun 2020). Of course, the constraints on index shaping are different, and arguably more onerous (i.e. the duty to represent a sample of large firms). But the fact remains that the leeway of index engineers could be exploited in the same way that central bankers do: with the aim of ensuring the stability of the financial system, rather than maximising the visibility of *Euronext*.

Stock market indices permanently go beyond the passive role of reflecting an external reality: they can claim several performativities, which had not been identified by the scientific literature. The six dilemmas have shown that several financial actors have been aware of this for a long time and have tried to direct the shape of the indices towards their interests. However, these performativities are sufficiently important for the constitution of stock market indices to be more open to public debate. In conclusion, we have put forward three issues on which such a debate could be based, in order to compare the qualities of different indices.[13] Two research perspectives could enrich our results (and the debate on financial indicators). Firstly, a deepening of the comparative approach. A more detailed study of American indices, but also of indices elsewhere, would bring to light the cross-cutting aspects of stock market indices and the possible regional specificities. For example, it would be fruitful to investigate indices attached to differently instituted financial markets, such as the SSE Composite (the main index of the Shanghai stock exchange produced by the company *China Securities Index* founded in 2005). Secondly, an extension to other financial indicators. We have mentioned central bank rates and credit ratings which have been the subject of some publications (Stellinga 2019; Braun 2020), but many other indicators consulted by traders have not yet been explored. The most widely used information platform in trading rooms, Bloomberg, offers thousands of indicators, and some of them have achieved sufficient success to frame the way the market is viewed.[14] More fundamentally, such an extension would allow for a better understanding, from the inside, of those devices now acting as the main regulators of financial markets.

Notes

1. Stillman (1986) and de Goede (2005) have documented the history of the Dow Jones, Hautcoeur (2006) the one of the CAC 40, and Duterme (2021a) of the BEL 20.
2. We use this concept here in its broadest sense of 'realisation' (as does Muniesa 2014, p. 12), thus going beyond the 'Barnesian performativity' that MacKenzie (2006, p. 17) confines to effects on the object of the device (in this case, the stocks included in the index). The concept of 'performance' might therefore have been appropriate if it had not been too closely associated with the returns of a stock market index.
3. This combination can be linked to Muniesa's approach when he studies the order-matching algorithm of the Paris stock exchange from two angles: its constitution as a socio-technical compromise between bankers, stockbrokers and reformers (Muniesa 2005) and its performativity, that is the credit given by the financial community to the prices produced by this device (Muniesa 2007). The difference is that stock market indices still do not enjoy the 'naturalness' acquired by matching software, which allows us to study these two issues in the present time.
4. The index option gives the holder the right to buy or sell the index at a predetermined price and date, while the index future concludes a transaction at a predetermined price and date. Since indices – unlike the agricultural commodities from which these derivatives originate – are not 'deliverable' at the expiration of the contract, the holder gets from the seller the difference between the predetermined price and the market price at expiration (if it is positive, of course).
5. When the statistical agency was concerned with maintaining continuity, it published a 'conversion factor' to connect the old and new indices (Duterme 2021a).
6. This index, which is used as a reference for many contracts, indicates the borrowing rate on the interbank market based on the declarations of the main banks. It has been the subject of numerous frauds that have come to light since 2008 (for an analysis of the event based on the economics of conventions, see Dupéret 2019).
7. Free float capitalisation is equal to the share price multiplied by the number of shares actually tradable (this excludes lots of shares representing more than 5% of the total and held by the same person, as well as shares held by a public body or included in an employee compensation plan). Velocity represents the proportion of tradable shares that are traded during the year (to be eligible, a company must have a velocity exceeding a certain threshold – 20% for the CAC, 40.35% for the BEL 20).
8. The method of calculation is summarised in three lines in the 'Index Rule Book'. It was only through interviews with staff members and consultation of archives (in particular the 1995 brochure *The Indices of the Brussels Stock exchange*) at the University of Antwerp that we were able to understand all the steps involved. As for the Steering Committee, we learned from interviews that it was composed of *Euronext* employees and three 'independent experts' (one member of the investment bank JP Morgan and two academics).
9. The BEL 20 was born with *Belfox*, the derivatives market based on an electronic trading system. For the sake of liquidity, this system required that securities be traded in lots of 250,000 Belgian francs, called '*quotités*'. The CEO of *Euronext Brussels* then modified the weights of the BEL 20 so that they represented a multiple of these lots.
10. '*It is clear that if we do not launch* Belfox, Belgian bond futures will be traded in London or Paris', Remi Vermeiren, president of *Belfox*, assured the newspaper *Le Soir* (Lanckmans 1990). For an analysis of the threat of capital flight in the Belgian reform, see Duterme 2022.
11. This merger later broke up when *IntercontinentalExchange* bought *NYSE-Euronext*, retained the *NYSE* and the *London International Financial Futures and options Exchange* (Liffe) that *Euronext* had absorbed in 2001, and split from *Euronext* in 2014.
12. In recent years, the new *Euronext* indices have been developed according to the type of industry represented (industrial, eco-responsible, etc.), rather than the territory involved.
13. This normative proposal goes beyond the orientation generally taken in the Social Studies of Finance, where the 'success' of a performative device is evaluated by the stability of the reality it institutes (Muniesa 2007). For devices with significant effects such as stock market indices or credit ratings, other, more demanding, criteria seemed relevant to us.
14. For a sociological analysis of *Bloomberg*, see Carluer 2005 and Duterme 2021b.

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