

COMPSTAT, COMMUNITY POLICING AND *THE SCIENCE OF SUCCESS*: A MARKET-BASED APPROACH TO POLICE MANAGEMENT

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Police departments in the USA have begun to embrace recommendations from two police management philosophies. However, it is often unclear whether these recommendations conflict with or complement each other. This article suggests that viewing these philosophies from a market-based perspective will enable police forces in the UK to better apply their recommendations.

Introduction

The idea that managers can look to the market as a model for running an organisation is surely among the most novel in all of economics. This novel idea also appears to have a potentially profitable application, as Charles Koch, CEO of the largest privately held company in the USA (in terms of revenue), Koch Industries of Wichita, Kansas, attributes part of their success to a management philosophy he dubbed Market Based Management® (MBM®). This philosophy attempts to harness the power of markets inside a firm, and Koch spells it out in his 2007 book *The Science of Success*.

This article discusses how the two principles of 'community policing' and 'CompStat', which are the police management philosophies that have generated the most attention in recent years in the USA, can be viewed in the light of the economic theory of markets and organisations, and the MBM philosophy.

In terms of technology and who has the authority to make decisions, CompStat and community policing are different approaches to making police organisations more effective. Both paradigms decentralise decision-making authority away from the very top of the bureaucracy, though community policing is more decentralised than CompStat as it empowers line officers rather than mid-level managers (police sergeants). Community policing rejects certain forms of technology (notably the car) in order to gain information, whereas one of CompStat's central characteristics is the use of computers to utilise information. However, it

should be noted that community policing encourages the use of new forms of technology such as citizen satisfaction surveys.

Viewed in this way, obvious conflicts become apparent between these two policing philosophies – namely, whether decision-making authority is given to officers or sergeants, and, on which forms of technology organisations spend their resources. This paper suggests that viewing both CompStat and community policing in terms of MBM is a promising way to ensure that beneficial parts of each of these two paradigms can be used and that the parts complement, rather than conflict, with each other.

This article also presents data from surveys of US police departments on a number of management characteristics relevant to the discussion here, as well as some basic indication of their effectiveness in reducing crime. While it is difficult to address effectiveness issues with statistical analysis, the simple statistics may nevertheless shed light on the degree to which the management of police organisations in the USA has become 'market-based' and whether the organisations that have become more market-based are obviously much better or worse than those that have not. The article concludes by putting forth a number of policy recommendations for police departments in the UK.

Two police management philosophies

Both community policing and CompStat have been the topic of considerable scholarly and practical attention that by now constitutes a vast literature.

In this section, the focus is limited to the main organisational, informational and incentive components of the two policing philosophies. As will be discussed, organisation, information and incentives are also important components in the economic theory of markets and organisations, as well as MBM.

Community policing

Before 1990, the traditional model of police management, with a bureaucratic, rigid chain of command, characterised policing in the USA. Efforts were centred on enforcement, via a reactive, incident-based response to crime, fuelled by the combination of motorised patrol and rapid response to emergency calls. Those at the top of the organisation made key operational decisions. As Maguire and Archbold (2001, p. 1087) note, 'For much of the 20th century police management textbooks urged police executives to adopt formalized, centralized, specialized, and hierarchical structures. Community policing seeks to reverse this trend, urging decentralized, less hierarchical, more generalized and less formal structures.'

The prototypical example that captures well the flavour of community policing is assigning police officers to permanent foot or bicycle patrols, or beats, in specific geographical areas. The hope is that on the one hand officers will gain local knowledge from increased interactions with the community, and that, on the other, officers can be made to be accountable for their beat. By deliberately not using technology such as motorised vehicles, the organisation is able to be more effective by recognising that the knowledge, experience and talents of line officers are of central importance.

To ensure officer accountability, police organisations rely on feedback from the community to measure effectiveness, in addition to the use of traditional crime records data and oversight. This has required the development of new technology, including citizen satisfaction surveys. Having better information on officer effectiveness makes detecting poor performance and rewarding good performance (i.e. merit pay) possible. To the degree that criminal responses to policing are similar across beats, comparing beats allows the potential for evaluating police outcomes in one beat relative to another, and this can provide valuable information that can be used as a basis for compensation. In addition to bonuses, pay rises and promotions can be based on merit. Comparative performance evaluation, a form of benchmarking, has been a major focus in the literature.¹

In a nutshell, the main components of community policing – delegating authority to line officers, and taking away some of their technology – serve to generate better information in

the organisation. This information can be used for tactical as well as motivational purposes.

CompStat

CompStat (computer statistics), by contrast, places decision authority at the level of sergeants, and uses information technology (IT) to better utilise information. As with community policing, this information is used for tactical and motivational purposes. Former New York City Police Commissioner William Bratton initiated CompStat in the 1990s by using a computerised database to measure crime statistics at the precinct level. In addition to the use of IT, the other important components of CompStat were meetings in which precinct commanders were expected to be familiar with the trends in their jurisdiction and were judged on how they responded to those trends. The extensive use of statistics and analysis in these meetings to provide incentives to mid-level managers are the hallmarks of CompStat.

While community policing intentionally relaxes its use of some technology and uses the community to gain knowledge, CompStat intentionally invests in IT to process knowledge and measure performance. However, like community policing, CompStat facilitates comparing the performance of some employees through its use of geographically-based decision rights; CompStat facilitates benchmarking (or comparing the performance) of sergeants across precincts, whereas community policing allows benchmarking of officers across beats. While both approaches can in principle make use of benchmarking, it has been the CompStat approach that has placed greater emphasis on performance and benchmarking in practice. Decentralisation along geographic lines is often much more useful for comparison purposes than decentralisation along other lines. For instance, officers placed in functional divisions, e.g. cyber crime and arson divisions, likely do very different things and are therefore difficult to compare, but geographic areas are often (though not always) relatively comparable.

Police forces have important trade-offs to consider when choosing which components of these paradigms to incorporate, with respect to allocating decision rights, using technology and instituting a system of incentives. Giving decision authority to line officers permits one set of knowledge inflows and incentive systems, whereas giving the authority to sergeants involves an entirely different set of knowledge and incentives, and it is often ambiguous which of the two will be better. For example, some knowledge is tacit – it cannot be codified and placed in a computer file – and community policing makes better use of this type of knowledge. But, if precincts are easier to compare than beats, then monitoring will be less costly and the mid-level decentralisation

associated with CompStat will provide stronger incentives, and possibly better coordination.

For what follows, the most important points to take away from the discussion above are the ways in which structuring decision rights, incentive systems and information technology are related in both approaches to policing.

The economic theory of markets and organisations

This section reviews three seminal papers from the economics literature that help our understanding of the general distinction between organisations (firms, bureaus, etc.) and markets. It also clarifies why markets are efficient and why they should be considered as models for firms whilst bearing in mind the differences between organisations and markets and the specific actions that can be taken to ensure that firms behave more like markets. The interplay between decision rights, incentive systems and information technology is key; thus economic theory can be used to reframe the discussion of CompStat and community policing.

In his 1937 article, Ronald Coase discussed the difference between firms and markets, and wondered why co-ordination is the work of the price-mechanism in the case of market transactions, but is the work of the entrepreneur in the case of the organisation. His answer is that because *transaction costs* accompany market exchanges, firms arise in order to avoid these costs. For example, one has to write up a contract (or spend time haggling) before providing services to another with market exchanges. But imagine that two people interact with each other several times a day; writing a contract all the time becomes too costly, and so one party will simply agree to an employment contract, where the actors work together through a long-term relationship, in order to avoid transaction costs. Although Coase did mention there are costs associated with an employment contract, these costs were not his focus. Nevertheless, that the relevant comparison in determining whether resources are less expensive to co-ordinate through a market or through an organisation depends on transaction costs was an important step.

One of the most fundamental questions that economists since Adam Smith have sought to explain is why the market is efficient. Friedrich Hayek, writing in 1945, argued that the decentralised, market economy is efficient because people with the best knowledge of particular situations – the actual producers and consumers involved in transactions – decide how to use the relevant resources and will therefore do so efficiently. This is in contrast to centralised economies where bureaucrats made decisions, with little idea about the actual conditions in businesses or households. Learning about these conditions is

costly for bureaucrats, and sometimes impossible, and this is why, for Hayek, only the decentralised market can ensure those with the best knowledge make decisions. However, Hayek did not mention exactly how the market allocates decision rights to those with the best knowledge, nor did he discuss how knowledge is transferred or produced, both important questions when viewing organisations in the light of markets.

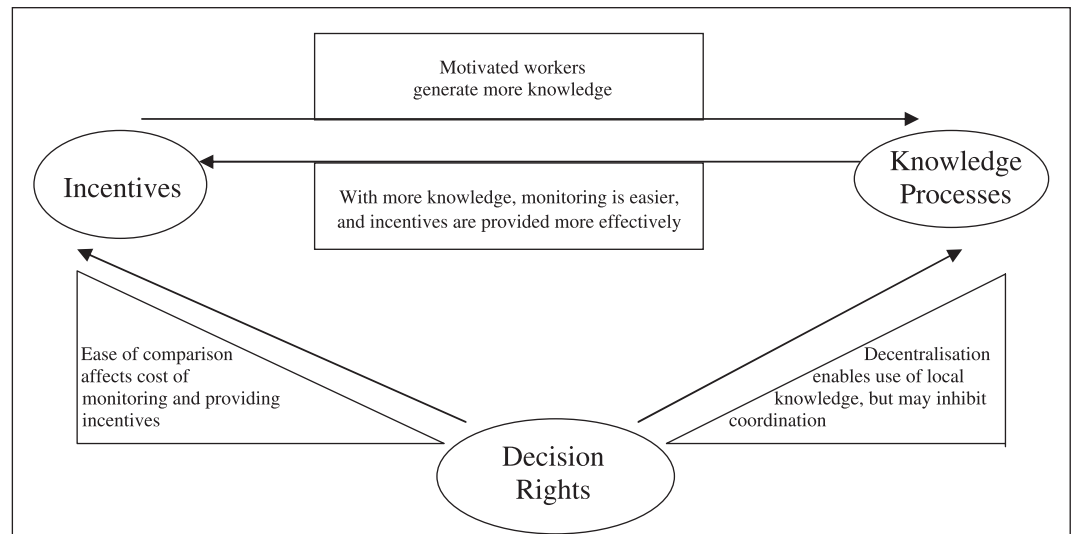
Michael Jensen and William Meckling (1992) provide answers to these questions, as well as the one left unanswered by Coase: the source of the costs of co-ordinating resources inside an organisation using employment contracts is that employees usually do not have incentives in line with the top manager. Employees would rather work less, if they could do so undetected, even if it means profits fall slightly. Thus incentives for hard work and innovation inside firms are worse than those provided through the market, which provides high-powered incentives to owners through the profit motive.

On *how* the market allocates decision rights to the person with the best knowledge, Jensen and Meckling observe that a key component of the idea of ownership is the ability to sell one's decision rights and keep the proceeds: that is, ownership implies *alienable* decision rights. As people with the best knowledge tend to be willing to pay the most for a set of decision rights over capital, goods and services or other property (because they stand to make the most profit from exercising them) the market economy tends to allocate decision rights to specific items of property to the people in the best position to benefit from exercising those decision rights. Furthermore, as owners, they themselves receive any profit and therefore do not need to be provided with an incentive to work hard and innovate. Thus the market solves both the incentive problem that arises from misaligned incentives with employment contracts, and the knowledge problem that arises when people with the best knowledge do not make decisions, and it is for these two reasons that the market economy is efficient.

In organisations other than the market economy, decision rights can be moved around through changes in job descriptions and other means, but even if they are allocated to the people with the best knowledge, these rights are rarely alienable.² Organisations can decentralise in order to mimic the market, and may be successful in solving the knowledge problem, but they will still face the incentive problem. The lack of alienability is the fundamental reason, according to Jensen and Meckling, why firms cannot run as markets.

There are two ways organisations try to solve the knowledge problem: 'One is by moving the knowledge to those with the decision rights; the other is by moving the decision rights to those with the knowledge' (Jensen and Meckling, p. 4³). The

Figure 1: Interaction between incentives, knowledge and decision rights



former is known as the MIS (management information systems) solution, whereas the latter is known as the 'organisational design' solution.⁴ Reframing Jensen and Meckling's argument in the context of policing, *CompStat can be viewed as an example of the MIS solution, whereas community policing is an example of the organisational design solution.*⁵

To solve the incentive problem, firms must do two things: 'provide measures of performance' and 'specify the relationship between rewards and punishments and the measures of performance' (Jensen and Meckling, p. 21). In addition to the quality of information systems (including IT and citizen satisfaction surveys) the structure of the organisation also affects the ease of measuring performance. As discussed above in terms of community policing and CompStat, comparing performance may be easier in organisations with decentralised, geographic-based decision rights.

In Jensen and Meckling's framework, allocating decision rights, creating an incentive system and using technology are key components to ensure decision-makers who have the best knowledge, and the right incentives, make choices. Figure 1 attempts to summarise the discussion up until now. Thus to make firms more like markets, organisations decide on a level of decentralisation (decision rights), a reward and punishment (incentive) scheme, and a system of measuring performance (knowledge processes) to ensure employees are performing well, and these decisions are highly interrelated.

This paper has so far discussed the basic interrelationships between three variables. However, MBM, the topic of the next section, maintains that the management problem should actually be viewed as having more than three dimensions.

The Science of Success

Structure, incentives and knowledge are three of the five dimensions of the MBM approach spelled out in *The Science of Success*; vision and virtue/talents are the other two. According to the MBM approach, vision comes first, and vision starts with value. Creating superior value means creating more value for customers (or citizens in the case of policing), than another organisation could create using the same resources. In *The Science of Success*, a major emphasis is on continually seeking out new opportunities to create value: thus, vision is a dynamic concept.

It is perhaps even more important to recognise the notion of having a dynamic vision based on creating value in a public organisation like a police department, as public firms are not competitive firms that are at risk of being forced out of the market. Police organisations must be made to bear the pressure of providing superior value. With the advent of community policing, an important change of vision did indeed occur, as the focus of policing moved from rule enforcement, central in the traditional approach, to the recognition that citizen satisfaction is the actual product police provide. Maintaining a dynamic vision also means constantly innovating. One important benefit of proper decentralisation and incentives is that they can positively affect innovation, as more actors can carry out more experimentation when decision rights are decentralised and because tacit knowledge can be used more effectively.

The other dimension of MBM is 'Virtue and Talents'. The importance of having talented people in the organisation is easy to recognise. Police organisations in the USA have increased requirements for college degrees over time. In the data discussed in the next section, only one

Vision: determining where and how the organisation can create the greatest long-term value.

Virtue and Talents: helping ensure that people with the right values, skills and capabilities are hired, retained and developed.

Decision Rights: ensuring the right people are in the right roles with the right authorities to make decisions and holding them accountable.

Incentives: rewarding people according to the value they create for the organisation.

Knowledge Processes: creating, acquiring, sharing and applying relevant knowledge, and measuring and tracking profitability.

Figure 2: Five dimensions of MBM
Source: *The Science of Success*, p. 26.

department (less than 1% of the sample) required a four-year degree, and only seven (about 4%) required a two-year degree in 1990, whereas in the 2003 sample, 3% of organisations required a four-year degree and 10% of organisations required a two-year degree. However, the importance of virtue is also emphasised as being distinct from one's abilities. Incentives should be based on how well employees practise the organisation's principles. Organisations should not only measure effort, but also talents and virtues.

Koch comments on perhaps the most important idea of MBM, '... the real power of MBM ... is the way the dimensions become mutually reinforcing when applied systematically and consistently over time' (Koch, p. 26). Economics provides some deep insights about how the three dimensions of incentives, decision rights and knowledge are related, but more attention should be devoted to how the other two categories – vision, and virtue and talents – are related in the broader framework in the context of police management and management in general.⁶ A greater familiarity with MBM would help police practitioners accomplish this task.

Statistics and data analysis

Compared with other countries, the USA has a highly fragmented system of policing. According to Maguire and Archbold (2001, p. 1083), the USA has approximately 20,000 state and local police agencies, whereas Canada has 461, England 43, India 22 and Australia eight. Many agencies in the USA are small, with 81% employing fewer than 25 full-time sworn officers. This variety in the USA provides an opportunity to compare how management forms have changed over time and across departments as the two policing paradigms

gained popularity. The data come from Law Enforcement Management and Administrative Statistics (LEMAS) surveys, conducted in 1990, 1997 and 2003 by the US Department of Justice. After combining data on the 100 largest city and 100 largest county organisations from 1990, 177 organisations were left after excluding smaller organisations that serviced the same population as a larger organisation.⁷

Previous research has provided evidence on the extent of the use of community policing and CompStat. Maguire *et al.* (2003) find evidence of an increase in the use of some components of community policing in the 1990s; however, the speed of structural change is slow compared with the pace urged by community policing reformers. A Police Foundation survey (Weisburd *et al.*, 2001), found that a third of the country's 515 largest police departments had implemented components of CompStat by 2000, meaning many agencies around the nation are now implementing information technologies to track data on crime, disorder, calls for service and the action taken by police, as well as other ideas from the CompStat paradigm.

Overall, the LEMAS data seem to be consistent with the story of an increase in the use of both CompStat and especially community policing. Several statistics are worth mentioning. In 1990, 18.6% of the organisations in the sample had at least one bicycle. By 2003, 73% of the organisations in the sample had at least one bicycle: this was a remarkable increase. More departments had bicycles, and there were more bicycles per officer and fewer cars per employee. This suggests departments are giving up cars in favour of simpler technologies, consistent with the community policing paradigm.

In 1990, 78% of departments indicated they used computers for crime analysis purposes, but in 2003

this statistic fell to 65%. While this seems to reflect a decrease in the use of CompStat, another statistic from these surveys indicates CompStat is on the rise. In 2003, 70% of departments indicated they had a full-time division for crime analysis, up slightly from 1997; the question was not even asked in 1990. Therefore, it seems departments may be using more CompStat-like management, but it is unclear how to reconcile this with the statistic on the use of computers for crime analysis.

Finally, it is important to know how management characteristics influence crime rates. Unfortunately, using statistics to explain what affects crime is one of the most complicated questions in the social sciences. Therefore, here are just the basic crime statistics, taken from the FBI's uniform crime reports. On average, crime fell in cities between 1990 and 2003; whereas in 1990 there were ten property crimes and three violent crimes per 1,000 people, by 2003 there were six property crimes and 2.4 violent crimes per 1,000 people in the cities that were in both the 1990 and 2003 samples. Cities' police departments that added bicycles saw property crimes fall by about 20% more than those that did not and they saw violent crime fall by about 50% less than cities that did not add bicycles. Cities that did not begin using computers for crime analysis purposes saw violent crime fall over 2.5 times more than cities that did, while there was almost no difference between these cities with respect to property crime. In sum, it seems that adding bicycles is correlated with lower property crime and higher violent crime, and beginning to use computers for crime analysis is associated with higher violent crime, with no correlation to changes in property crime. Of course, these statistics should be interpreted with serious caution. They do not speak to issues of causation (did the management characteristics cause changes in crime, or did the changes in crime influence management characteristics?). If anything, these basic statistics suggest that neither paradigm is obviously better than the other. More sophisticated statistical analysis is needed to answer the effectiveness question. Alternatively, the case-study approach of the type presented by John Blundell in this issue may speak more clearly to effectiveness concerns.

Lessons for police force management

The main lesson is that looking to the market for ideas on police force management has the potential to offer large returns. By incorporating ideas from CompStat and community policing, police departments in the USA are making changes that also happen to be consistent with some ideas from MBM, but they are doing this unwittingly. To make better use of the mutual reinforcements across different management dimensions, as stressed by MBM, practitioners should consciously think of the

management problem in terms of a coherent framework. Greater economic literacy may facilitate understanding of the MBM framework; currently, most police degrees do not require a single economics class. Other recommendations that could be implemented immediately are:

- Decentralise optimally in order to take advantage of local knowledge, coordination and innovation. Recognise that the downside to decentralisation is higher monitoring costs. Careful decentralisation can minimise these costs, via benchmarking.
- Recognise how technology can both help and hurt an organisation in terms of generating knowledge and affecting monitoring costs. Police cars, computers and citizen satisfaction surveys are all forms of technology, and can sometimes be used to improve knowledge, but sometimes come at the expense of knowledge.
- Reward not only hard work but also talents, virtue and innovation.

A final lesson is that, just as Koch points out, MBM should not be an end in itself (p. 39), neither should CompStat nor community policing. The goal is efficiency in the use of police resources to deliver a service to the community. Markets and organisations differ in a fundamental way, and there is no guarantee that one can transplant techniques that are successful in organisations to markets or vice versa. However, the real possibility of increased efficiency means the MBM approach is something police forces should seriously consider.

Coordinating structural, motivational and informational components of a police force, as well as other important issues like vision and virtue, can be better understood and applied in the context of MBM. There is great potential for synergy between scholars of policing, economics and MBM; bringing more people into the dialogue will be beneficial for scholars and practitioners working in all of these areas.

1. Several studies have explored the idea of how to structure performance incentives in the context of policing: see Maguire (2004) and Oettmeier and Wycoff (1997). Koch (2007, p. 108) also discusses benchmarking. For an introduction to the economics literature on the topic, see Milgrom and Roberts (1992).
2. Franchise relationships represent an attempt to introduce alienable rights into organisations, as Jensen and Meckling (1992) discuss. In theory, franchising could be applied to policing, although the author is not aware of any attempts to do anything like this in the USA or elsewhere. The basic idea is that an officer would pay the department for the right to patrol a beat, and would then be paid for the quality of service he provides. Then, when the officer wants to either change beats or retire, he is able to sell the right to patrol the beat to the highest bidding officer. If, when he sells this right, crime is lower on the beat compared with when he bought it, the sale would presumably result in a profit, as the now safer beat is easier to patrol. This profit motive would encourage

both entrepreneurialism and hard work. This type of police beat franchising is different from what is often called 'privatisation' in discussions surrounding other local public services, which could more accurately be described as 'contracting'. With contracting, contractors can be paid for the quality of service they provide, but when the contract expires, they are not able to sell the right to perform service to someone else, and so the contractor has 'ownership' over its jurisdiction in a much more limited sense compared with a franchising arrangement. In the USA and the UK police beat franchising would undoubtedly be viewed as a more radical policy than contracting, and even contracting is rarely (if ever) used in policing.

3. Page numbers refer to the web version of this paper, available at: <http://papers.ssrn.com/abstract=6658>.
4. For an excellent review of these ideas, see Chang (2006).
5. To be more precise, both policing paradigms have aspects of both organisational design and MIS solutions; however, the most prominent characteristics of the two paradigms make CompStat most closely in line with the MIS solution, and community policing most closely in line with the organisational design solution.
6. Charles Koch in *The Science of Success* views the world not only through the lens of economics, but through 'the Science of Human Action' which incorporates economics, ethics, social philosophy, psychology, sociology, biology, anthropology, management, epistemology and the philosophy of science (Koch, p. 25).
7. For example, often a county has both a large metropolitan police department as well as a small sheriff's department to serve the rural community. In this case, the county sheriff office was dropped from the pooled data set. Other times, the sheriff's department is larger than any metropolitan police department in the county, in which case the metropolitan police departments are excluded from the data pool. The 1997 and 2003 samples were constructed in a similar fashion.

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