

Chapter 7

On the Role and Significance of Contextualization in Economic Research

Dinesh S. Hegde

7.1 Introduction

It might be worthwhile to recall a familiar story about a shipwreck and the three survivors marooned in a small island, hungry and waiting for rescue. One of them was a physicist, the second a chemist and the third an economist. Lo and behold! All of a sudden, one of them notices a can floating ashore and picks it up only to find to their utter relief and joy that it is a can of food. Now, the problem was how to open the can. The physicist said, if only he had a prism, he could make the sunrays focus on the lid and open the can. The chemist said, if only he had some chemicals, he could make a reaction happen and make the lid come off. But, with no access to prism or chemicals, they both felt helpless and looked at the economist expectantly. The latter said, 'let us assume there is a can opener!' Surely, societies, their polities, economies and peoples are far more complex and so are their interactions, be they cultural, social, political or with respect to trade, commerce, science and technology, what with the vastly divergent role of the state and institutions. In order to understand this complexity, therefore, simplification and abstraction become necessary which in turn entail assumptions. But the question rarely asked is how far and at what cost? It is time, one raised such a question, especially in the light of the monumental failure to foresee if not predict the USA and European financial crises in the recent times. Not long after the crisis erupted, the Queen of England expressed her dismay in an address at the London School of Economics in late 2008 and asked why nobody noticed it and how everybody missed

D.S. Hegde (✉)

Former Professor of Economics and Dean (Academic), National Institute of Industrial Engineering, Mumbai, India

Present Affiliation: Visiting Faculty, IIM Raipur, India

e-mail: dshegde108@gmail.com

© Springer India 2015

D.S. Hegde (ed.), *Essays on Research Methodology*,

DOI 10.1007/978-81-322-2214-9_7

it. To her utter surprise, the response to the Queen by Professor Luis Garicano, the then Director of Research, was one of sheer helplessness, but revealing nonetheless. He said, at every stage, someone was relying on somebody else and everyone thought they were doing the right thing. More astonishingly, yet another incidence took place three years later. On 2 November 2011, students of an introductory course in economics at Harvard University walked out of Professor Gregory Mankiw's class after giving him a protest letter citing reasons of bias, espousing a limited view that perpetuated problematic and inefficient systems of economic inequality. They highlighted, among others, the need to include a critical discussion of pros and cons of various simplifying models.

Needless to say, the two instances cited above speak volumes as to the extent to which relevance has been relegated to the backstage and the scarce attention, if any, paid towards exploring possible alternatives. It is against this backdrop that the paper attempts to address the very important issue of relevance with a focus on contextualizing analysis for better understanding of problems, events, processes and phenomena, enriching analysis and balancing quantitative precision with qualitative narrative-descriptive complexity. In so doing, some fundamental assumptions and judgments are critically examined in addition to highlighting the need to sound caution on perils of disparate data sets being subjected to empirical investigation.

The obvious question that arises here is what do we mean by contextualization? It refers to comprehending things, events, processes and phenomena occurring around certain historical happenings, work settings, organizational settings and geographical and social settings of countries and their peoples and in particular their internal dynamics including power relations, their influence in public policy and its processes, agenda and implementation so that analyses are located in such contexts. Notwithstanding that the main objective is to make advances in inquiry and knowledge, contextualizing, therefore, assumes significance whether the research study is on poverty, traffic, productivity, work ethos, entrepreneurship, gender, ethnic, land reforms, civil rights, racism, health, environment or market regulation. Also significant are power relations and their influence over public policy, its processes, agenda formulation, implementation and the like. In this way, when events, processes or phenomena under study are placed in the appropriate context, our understanding of complex issues in their entirety is likely to improve a great deal. In other words, rigour if combined with relevance has higher potential by way of contributing useful knowledge or its advancement, rather than quantitative accuracy per se. To begin with, some recent trends are taken up for discussion and how gaps in understanding them have led to cynicism. Some specific contexts discussed, among others, are estimates of poverty and air traffic in India. This is followed by a description of emerging technologies, some incremental and others of leapfrogging variety, and an analysis of their implications. Lastly, a few spillover/spread effects of such new technologies are also highlighted. The sections are structured accordingly.

7.2 Yawning Gaps

What is noticeable conspicuously for a long period now is that most analyses have been carried out in the straightjacket frameworks of static, comparative static and dynamic types, in our thinking as well as analysis, and in this journey, we have largely gone along with assumptions of rationality of the economic agents (who as consumers maximized their utility and as producers maximized their profits) and efficiency of markets. That such a tendency has come to prevail for so long springs hardly any surprise! Few would desire to move from the comfort zone, for after all, it served the purpose well amidst the continuing prosperity of the developed Western economies for five to six decades following the end of World War II and the dominant thinking that developing economies could replicate this experience if only they followed the leaders. The differing sociocultural contexts, pressure on land given the huge populations and their densities in the developing countries tend to be glossed over in making such inferences. One should only recall the vocal and often violent protests against industries, mining and SEZs to gather evidence of this nature, thus casting serious doubts on the wisdom of such a partial and simplistic approach to growth and development strategies. Likewise, it does not occur to us until the damage is done that a policy of subsidizing biofuels while mitigating the energy problem goes to hamper food supplies. Again, we monetize bad debts of banks to farmers, power, aviation and others and then complain about inflation, worsening fiscal deficit. Yet, time and again, we fail to see that the subsystems within the system are interconnected and disturbance in them either induced or autonomous does cause disturbance in the other subsystems and finally in the entire system depending upon the degree of interdependence or backward and forward linkages and their relative strength in terms of the ripple effects. In all this, there appears to be a general amnesia, as it were, in not recognizing the serious limitation of partial equilibrium analysis and reductionism. Is the reluctance due to the comfort zone within which things have served us well in the past and should only be expected to do so in future as well? Or is it due to a diehard belief that assumptions are in any case required for the purpose of simplification and abstraction and variations can always be explained away by being exceptions not falling within the ambit of the *ceteris paribus* assumption?

Thus, given this dominant paradigm as advanced by Thomas Kuhn's *The Structure of Scientific Revolutions*, it follows that the underlying belief and philosophy were no different with regard to applied econometrics as well. Historical contexts, institutions, organizations and values, not being amenable to quantification, have conveniently been excluded. The results of such studies, by and large, fell neatly into place or at least appeared to be so. Almost routinely, sign, size and significance of the coefficients of the regression equations were reported and the hypotheses accepted or rejected. The objections raised by Karl Popper in his *Conjectures and Refutations* (1962) as to 'acceptance' of a hypothesis and his advocacy of 'falsification' as a criterion for scientific knowledge, failing which a

more appropriate recourse to 'non-rejection', seem to have been forgotten. If at all, there were problems, they could invariably be explained in terms of possible data-related and/or model-related problems. Rarely, one reflects beyond the surface, even when the estimates and forecasts tend to be way out of line with reality and of little use. Nevertheless, the curve-fitting exercise has continued unabated. Often, variations could be seen by way of non-linear models; introduction of lags, continuous functions, etc.; causal relationships established; and the paths worked out to suggest damped, explosive or fluctuating tendencies. In a dynamic context, expectations were introduced. Also came to be widely used are time series models to reflect the viewpoint of letting data speak for themselves! Thus grew the copious literature including numerous Doctoral and M.Phil dissertations. Over the years, the trend has only perpetuated itself so much so that one is reminded of Schumpeter's (1964) prophetic apprehension as to the latter half of the twentieth century being characterized by thoughtless empirical work as against the excessive word-mindedness of the previous half. He had also cautioned about the pitfalls of economists having knowledge of history but without a sense of history. The latter has already been dealt with in Chap. 1 of this volume, with illustrations from the abolition of Corn Laws and the unwarranted frequent usage of the word struggle.

One may wish to consider, for example, the poverty estimates in the country over the decades. Going by these estimates, the proportion of population living below the poverty line varies between 1/4th and 3/4th, depending upon the criteria adopted (per capita minimum caloric consumption, expenditure, access to basic goods, etc.). Rarely considered are the barter exchanges and other nonmonetized transactions that commonly take place in rural areas. In fact, they cannot even be termed as exchanges as more often, they take place arising from economy of affection among neighbours, relatives and friends. Thus, frequently, a portion of home-grown pumpkins, gourds, jackfruit, sweet potatoes, tapiocas and other fruits and vegetables is shared among these people.

Further, we may take the case of demand elasticity of electricity with respect to GDP at 1.5 or its counterpart for air traffic at around 0.6. The former implies power generation had to grow at 9 % to meet the needs of the economy growing at 6 % in the 1990s, as was repeatedly harped upon then. Towards the end of the decade or thereabout, the Power Ministry lowered the target from 9 to 7 %. Of late, we keep hearing about the sector having to grow at about 6 %, suggesting in effect an income elasticity of demand around 0.8 in the face of the economy growing between 7.5 and 8 %. Clearly, it was a case of gross overestimation! As to the air traffic, it is a case of gross underestimation, as it has been growing at around 16–18 % in the last few years as against the forecast growth of around 4 % based on the estimated income elasticity. One wonders what the missing links might be! Could it be that the composition and structure of electricity demand (as between agriculture, industry, services and households) and its pattern had changed? Likewise, in the latter case of air traffic, could it be that proliferation of no-frill airlines and/or changing lifestyles induced higher growth in air traffic? Also, cases are not infrequent where demand

elasticities are estimated without even converting incomes data to constant prices. Needless to say, such large deviations between forecasts and actuals undermine credibility in the eyes of practitioners who tend to become sceptical and even cynical about the so-called academic exercises.

7.3 Some Recent Trends and the Larger Perspectives

At this juncture, it is pertinent to recall here what Koopmans had stated in his *Three Essays on the State of Economic Science* (1957) by way of criteria of a good theory – rigour, relevance, comprehensiveness and immediacy. Arguably, the great success of Keynes's General Theory was precisely because it fulfilled these criteria to a large extent. The Western economies could pull themselves from the Great Depression of 1929–1933 and experience unprecedented development with substantial growth in incomes, employment and quality of life spread over the next five to six decades, needless to mention the enormous amount of scholarly works that ensued including the well-known growth models and empirical literature. Little wonder, it came to be known as Keynesian revolution! Incidentally, it is significant to recall how carefully Keynes formulated his consumption function, savings function and investment functions making frequent references to psychological propensities, psychology of savings, psychology of investment, psychology of the community, psychological characteristics and the like. Such behavioural aspects seem to be forgotten long ago. Subsequently, however, there has been some excessive overindulgence with it on the part of many a country including many developing ones as well, justifying fiscal profligacy and the so-called consumption story almost to the point of bankruptcy. Indeed, it was not infrequent for students to raise doubts during lectures as to the virtues of savings, investment and factor productivity in the growth context. It simply did not carry conviction with them in the face of the grand American consumption story driving the growth trajectory. It was all so overwhelming not only for students but also professionals, analysts, mighty media and policymakers. Perhaps, it has now begun to dawn upon them that behind all this were reckless borrowing, feeding consumption and speculation and that bulk of such demand arose from neither needs nor wants but from aspirational consumption, compulsive buying (for its own sake), self-aggrandizement, acquisition and/or greed. A detailed account of this phenomenon can be obtained from several issues of the economist over the last few years and also in the recent work of Seaward (2005).

At one end of the spectrum, we have ivory tower academicians engaged in theories, models and testing with little regard to their relevance, based on assumptions which are sometimes described as being fat with excess content. The readily available user-friendly software packages have further lent momentum to this trend.

At the other end of the spectrum, there are professional consultancy outfits, some private, some public and yet others autonomous bodies, and individuals

providing quick fix practical solutions which might be relevant but falling far short of rigour and comprehensiveness. Such solutions are, by and large, partial and short term in nature and do not address the long-term and systemic perspectives. As a consequence, we find firms implementing enterprise resource planning (ERP), moving towards strategic business units (SBUs), etc., without an understanding of what impinges their performance in the first place. A case in point is the all too-familiar training/facilitation issue, for unless people who man the organization and its processes are not taken into confidence and trained in tune with the change and its requirement, the expected results are unlikely to materialize. It has been the experience of many an organization that IT integration sans people integration hardly makes the intended impact. Without the latter in place, one often finds firms with ERPs, SBUs, TQM, TPM, etc., being present more in form than in content! As has been widely seen, the first reaction of people occupying positions high or low would invariably be fear of possible loss of job, besides resistance to change which needs to be overcome first and foremost. Otherwise, one ends up in situations where the left hand does not know what the right hand does! For instance, it is not uncommon to observe Section Heads sending their daily reports manually, despite the prevalence of software packages like ERP in companies and Integrated Port Management Software (IPMS), etc. Admittedly, there is a lot to be desired in terms of contextualizing.

As between these two extremes of theory and practice, we find numerous empirical studies, some providing evidence in favour of or against the hypotheses formulated, others inconclusive and calling for further work, extensions, etc. In most such works, however, it is scarce to find the underlying paradigm being critically examined in their undue haste towards quantitative analysis of data using readily available software packages. At times, even the adequacy and accuracy of the data sets do not seem to get due attention and yet elaborate tables tend to be produced and size, sign and significance of the coefficients get interpreted. The possibility of the data not being independent of theory or that a grounded theory might emerge out of empirical analysis is rarely considered. In this context, it might be worthwhile recalling Schumpeter's prophetic apprehension that if the first half of the twentieth century saw excessive word-mindedness, the second half would be characterized by thoughtless empirical work. Admittedly, the end result is there for us to see, by way of more and more output being churned out with scarce regard for theory and relevance.

It is thus seen that the question is not one of profit maximizing, satisficing or strategic behaviour. Although the latter two have gained greater acceptance in managerial economics over the years, they fail to take cognizance of faster pace of technological changes, tastes and preferences. In the section that follows, the rapid pace of technologies, both incremental and leapfrogging types, and of consumer behaviour and their implications are discussed. In addition, reference is made to influence other factors such as the increasingly larger human co-operation, institutionalism and sociocultural and historical backdrops/legacies.

7.4 Revisiting Assumptions in the Changed Context

Over a fairly long period of time, we have been in the habit of taking the assumptions for granted as they have served us well in the past and hence should be expected to do so in the future as well. That this expectation can be more than tweaked has rarely been considered. Besides, assumptions are needed after all, for the purpose of abstraction and simplification! It is time, however, we revisit the comfort zone in the light of the developments that have been taking place over the last three decades, culminating in what is now being called the new economy. The features of the new economy are described briefly in the following two paragraphs.

Viewed from the *technology front*, what has happened is not just incremental changes but leapfrogging progress with widespread spillover/spin-off impacts across industries, sectors and economies. Let us consider, for instance, the IT revolution. It has long ceased to be one of higher speed in computing and spread far and wide to communications, electronics, banking, travel, tourism, education, printing, publishing, entertainment, government and other services in addition to numerous IT-enabled services in manufacturing, BPOs, KPOs, etc. Also witnessed in the recent periods are the onset of several state-of-the-art technologies not only enhancing speed but also involving significant strides in material substitution, savings in energy, labour and other input costs, not to speak of recovery, recycling through application of cleaner technologies, better practices, etc. Two such examples which can be cited are a state-of-the-art agrochemical plant in the Union Territory of Dadra and a direct reduction process-based pig iron plant in Dolvi, Raigad, in Maharashtra. While the former has total manpower strength of 29 employees including 16 officers and above rank as against the 300 plus in the older plant, the latter has a little over 2,000 compared to the several thousands in others in the category. More significantly, there is also the adoption of cleaner technologies in such plants thus drastically reducing the end of pipe treatment costs including the associated energy costs. Added to such developments are the reinforced effects of part automation in production, introduction of PLCs, automated packaging and the like. In the recent times, we have many more such developments. They are cloud services, robotics and remote-presence robots enabling presentations at meetings/conference/seminar presentations without physically being present, digitally networked environs, 3-D printing, nanotechnology, fuel cells, artificially intelligent personal assistants or predictive intelligence softwares, use of magnetic tape for mass storage data, smart weapons, smart grids, smart cities, driverless cars, internet of things, etc. Indeed, they are simply mindboggling with an unimaginable gamut of widespread impacts!

On the *consumption front*, it is no longer the old story characterized and driven by needs and wants predominantly, with the sole exception of the Giffen goods. It is self-evident, for quite some time now, that aspirational consumption has gained stronghold and is on the rise with the active state and other institutional promotion of mall culture. In fact, it no longer comes as a surprise that semiurban and rural areas including urban slums provide huge markets for white goods, electronics, beauty

products, etc. So, tastes and preferences do change and, of late, have been changing at a faster pace. So much the worse, if they can be induced! Steve Jobs is often quoted these days to justify the merit of product designers deciding what consumers want in the face of the latter's ignorance! Surely, it has been so far so good, at least for the time being. It is not just Apple, but also Skype, Facebook, Twitter, Amazon, WhatsApp and several others testify to this. What the future will hold can only be left to one's imagination, stretched even to a wild one at that!

Clearly, therefore, neither technological progress nor tastes and preferences as envisaged in much of the previous century and least of all, their being constant can hold any longer. Such assumptions may have carried conviction during those yesteryears/decades, given the more or less stable pace in respect of either technology or consumer tastes and preferences over a fairly long period of time, say 30–40 years, as was the case with automobiles, aircrafts, chemicals, electronics, etc. Thus, it was reasonable to assume that technology as given, as in the Cobb-Douglas production function. It is, however, no longer so! For a detailed discussion on the subject, see Hegde and Nilakantan (2004), who have attempted to reformulate the model using a sigmoid function.

7.5 Spillovers Across Sectors

Up to now, we have discussed about the technological developments taking place within sectors like steel, chemicals, energy, IT, ITES, etc. There are still others gathering pace, which need our attention. Together, they hold immense possibilities not only within the sectors where they take place but also across several other sectors by way of ripple effects.

Such developments originate in a certain sector or industry and, in addition to revolutionizing that very sector/industry, are capable of bringing about immense impact in other sectors/industries as well. For instance, if fuel cells get commercialized and their usage generalized, the consequence would be large-scale ramifications in automobiles, grids and even individual households which, as is claimed, can then produce their own power requirements combining fuel cells and nanotechnology. So would be the implications of 3-D printing with immense potential for cottage industries in several sectors. Similar types of ramifications can be imagined as a result of intensifying alternative sources of energy that are of renewable variety like wind, solar, biofuels, etc., changing drastically the scarcity value of oil and foreign exchange. Digitally networked environment is yet another speedy and significant development with far-reaching implications for theory of the firm, market signals, organizational command hierarchy, reductionism and development of theory and policy. Cloud services are yet another recent development with immense potential for significant reduction in costs of IT infrastructure, its maintenance and use on real-time basis. This and robotics and 3-D printing are expected to usher in the 'third industrial revolution', according to a recent issue of *The Economist* magazine

(April 21–27, 2012)! Other significant developments in this category are arms and ammunition with expiry date with high prospects of peace, magnetic tapes for massive data storage as a least cost and loss-minimizing option, remote-controlled robotic presentations, shale gas discovery as a game changer, smart grids/cities, etc. There could be a sea change in scarcity values across the board, reduction and even pre-empting of waste, efficiency in resource use and finally ramifications on environment and geopolitical dimensions.

In a similar manner, impacts alongside can be envisaged with respect to consumption as well. Imagine a situation where the youth of a country take increasingly to a monk's hairstyle or dressing style of Steve Jobs! Demand for beauty products and formal dresses would then decline drastically. Again, if superfast bullet trains become a reality, demand for air travel may decline, and, in effect, derived demand for jet fuel, employment and expansion plans of the aviation sector, etc., may be severely impacted.

In the new economy, therefore, these secondary or spillover impacts combined with the primary impacts of changes in technology and tastes and preferences already discussed in the previous section may have a reinforced effect in a variety of industries/sectors. In the face of such developments, contextualizing and modifying theories and models become all the more inescapable.

7.6 Conclusion

It clearly emerges from the discussion that there exist gaping holes in the practice of continuing with unrealistic assumptions which, in effect, raise some methodological implications. Further, it goes on to show that assuming technology or tastes and preferences as constant is no longer tenable, especially in the light of their ever-increasing pace, variety and also the direct and indirect impacts which tend to have widespread ripple effects across several sectors. So also is the case with the assumption of efficiency of the markets. As a result, some serious issues with respect to theory, modelling and empirical work arise on the very grounds Koopmans had espoused and Schumpeter had cautioned. Thus, it is not merely a question of causal versus time series models, static versus dynamic models, linear versus non-linear models or partial versus general equilibrium analysis. Much more is involved if only we develop a sense of history in addition to according due recognition to the role of institutions, values and attitudes in addition to learning from practice and experience, thereby gaining insights to establish a connection with basic principles. Only then, we might be able to grapple with the changing context and to address the problems being faced in a more meaningful way as also strike a balance between rigour and relevance. It hardly needs to be overemphasized that such a possibility would be nearer, greater the adoption of a judicious mix of positivist and phenomenological approaches rather than an either or orientation.

References

- Hegde DS, Nilakantan K (2004) Implications of emerging technologies on econometric modeling: the case of production functions. In: Nachane DM et al (eds) *Econometric models: theory and applications*. Allied Publishers, New Delhi
- Koopmans TC (1957) *Three essays on the state of economic science*. McGraw-Hill, New York
- Schumpeter J (1964) *History of economic analysis*. Oxford University Press, New York
- Seaward BL (2005) *Quiet mind, fearless heart*. Wiley, Hoboken
- The Economist (2012) The third industrial revolution, April 21–27