Perfecting the Market

by

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Working Paper No. 79

July 2020

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Acknowledgements

The Lau Chor Tak Institute of Global Economics and Finance is grateful to the following individuals and organizations for their generous donations and sponsorship (in alphabetical order):

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Perfecting the Market[§]

Lawrence J. Lau[1]

July 2020

Professor WU Jinglian（吴敬琏）, whom all of us always refer to affectionately and respectfully as "Jing Lao（敬老）", has contributed to the research analysis and policy formulation behind Chinese economic reform over the past four decades more than anyone else. He has tirelessly promoted the role of the market in the Chinese economy, and has most deservedly earned the nickname, "Wu Shichang（吴市場）" or "Market WU". He has had a lasting positive impact on the Chinese economy and on the academic discipline of economics in China.

Beginning in the 1980s, when I first began to participate in the reform and opening of the Chinese economy, Professor Wu and I had many opportunities to exchange our views. I also learnt a great deal about the Chinese economy from him. Professor Wu has always steadfastly insisted on marketisation being the highest priority of Chinese economic reform. Among all the myriad Chinese economists, he is the one I admire and respect the most. In the process of formulating and implementing the important economic reforms in China in the 1990s, Professor Wu and I continued our regular discussions on the hot topics of the moment and shared each other's opinions, from which I benefitted greatly. I am honoured to dedicate this short essay on the market system to Jing Lao on the occasion of his Ninetieth Birthday.

[1] The author is Ralph and Claire Landau Professor of Economics, The Chinese University of Hong Kong, and Kwoh-Ting Li Professor in Economic Development, Emeritus, Stanford University. He wishes to thank Ms. Xiaomeng PENG, Prof. Yingyi QIAN and Ms. Suping WU for helpful comments on an earlier draft of this paper. Responsibility for errors remains with the author. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the Institute.

The Efficiency of a Competitive Market Equilibrium

The strongest argument for adopting a competitive market system for the allocation of goods, services and factors is based on the "First Welfare Theorem" of Economics, which states that, under certain conditions[2], any competitive market equilibrium leads to an efficient allocation of all resources. An efficient allocation of resources implies that, no one, consumer or producer, can be made better off without someone else being made worse off, which means that all resources are utilised to their fullest extent[3].

The "First Welfare Theorem" relies crucially on the assumption of a competitive environment in which each economic actor (consumer or producer) makes decisions on quantities that are very small relatively to the total quantities traded in the markets, so that their individual actions cannot have any perceptible influence on the prices. In other words, these are atomistic, price-taking, economic actors.

In a competitive market equilibrium, there can only be a single prevailing price for any good, service and factor at the margin. For example, if the same good is available in the market at two prices, potential buyers will all offer to buy at the lower price, eventually exhausting the supply at the lower price, or driving up the lower price towards the higher price, or both. The sellers at the higher price may also want to lower their selling price to attract more buyers. There will also be arbitragers who buy at the lower price and sell at the higher price. A single market price equilibrium will eventually be reached.

The beauty of the competitive market equilibrium as a means of attaining economic efficiency is the minimum requirement for collective information or action. If every economic actor acts based only on his or her own preferences and interests and the given market prices, economic efficiency is automatically achieved. No centralised collective information or action is needed. However, this is not to say that a centrally planned economic system cannot attain efficiency. It can; but much, much more information will be needed by the central planner in order to be able to do so, and enforcement will be necessary.

[2] Including taking the distribution of initial endowments among the consumers and producers as given.
[3] The "Second Welfare Theorem" states the converse, that is, subject to given initial endowments of the individual economic actors, any efficient allocation can be achieved as a competitive market equilibrium.

The Government and the Market

However, a market system cannot exist in a vacuum. A government is needed to provide certain functions in order for a market system to work properly. The government and the market are therefore not mutually exclusive alternatives. They complement each other. An economy needs both to survive and to prosper. For example, the government (or at least a public body with credibility) has to be responsible for the quality assurance of goods and services, the certification of professional qualifications, the enforcement of contracts (including explicit and implicit warranties) and laws, such as labour laws and laws against fraud, not to mention the maintenance of public order and safety. The government also provides the money--the legal tender--the liquidity for the markets to function. Anonymity in the market is possible only through the use of cash[4]. Without a credible form of money, many otherwise beneficial economic transactions will not take place, and the market cannot perform its function.

The government also has to maintain the conditions under which a market equilibrium achieves economic efficiency, or to adopt mitigating measures if these conditions cannot be fully satisfied. Only when these conditions are fulfilled or adequately mitigated can the market perform its role in the efficient allocation of resources. We shall also show below that there are many socially desirable outcomes that the market system alone cannot deliver. Thus, there has to be an appropriate balance between the government and the market--the visible hand and the invisible hand.

Maintenance of Competition

Free markets cannot achieve economic efficiency if there is not enough competition. The government can make the markets work better by preventing it from being controlled or manipulated by large economic actors who have the power to set prices, either singly or in collusion with one another. The government must enact and enforce anti-monopoly, anti-trust, and anti-illegal restraints of trade laws. In the U.S., these laws are embodied in the Sherman Antitrust Act of 1890[5] and the Clayton Anti-Trust Act of 1914[6].

[4] Historically, in many countries, including China and the United States, private commercial banks had been the issuers of money, but they all ended in failures.
[5] 26 Statute 209; Title 15, United States Code, §§ 1–7.
[6] 38 Statute 730; Title 15, United States Code, §§ 12–27 and Title 29, United States Code, §§ 52–53.

The Sherman Act prohibits anticompetitive agreements and unilateral conduct that monopolises or attempts to monopolise the relevant market. The Act authorises both public and private enforcement and provides for treble damages for injured parties. The Clayton Act specifies prohibited conduct of firms, including anti-competitive practices, monopolisation, collusion, formation of cartels, price fixing, bid rigging, product bundling and tying, predatory pricing, misuse of patents and copyrights, and other unfair trade practices. It is aimed at levelling the playing field between a large, non-atomistic producer and its smaller customers, and between a large, monopsonistic user and its smaller suppliers and contractors.

Classical Market Failures

One of the conditions for the validity of the First Welfare Theorem in an economy with production is the convexity of the production possibilities sets[7]. In simple language, this means that there cannot be increasing returns to scale in production. Increasing returns to scale will invariably and naturally lead to the rise of a monopolistic producer, who will set a price higher and a quantity lower that what economic efficiency requires. A monopoly typically operates at a point where the marginal revenue of its product is equal to the marginal cost, and therefore will violate the efficiency condition of price equal to marginal cost[8]. Thus monopolies, natural or otherwise, must be regulated by the government so as to ensure that the efficiency condition is satisfied as much as possible.

There are two other well-known classical instances of market failure because of asymmetric information between the buyers and the sellers. We all know the saying that "If a deal is too good to be true, it is too good to be true." The seller knows something that the buyer does not know. Applied to the life insurance market, asymmetric information leads to the phenomenon called "self-selection". People who know or believe that they will likely live a short life on the basis of private information are likely to purchase life insurance. People who believe otherwise are less likely to purchase life insurance. Thus, in equilibrium, only the "bad risks" will buy life insurance, which will result in the life-insurance company not being able to break even on its policies and going bankrupt. The typical mitigation is for the life insurance company to require a thorough medical examination and to have the right to refuse to sell a

[7] Non-convexity also includes indivisibilities.
[8] On the reasonable assumption that the demand curve for the product is downward sloping.

policy to a particular customer[9]. In time, perhaps with the general availability of genetic information, the information asymmetry may be significantly reduced. However, that also raises the question of how equitable social risk-sharing can be achieved.

Asymmetric information can also lead to "moral hazard", that is, people may undertake "hidden action" to take advantage of a contract so as to benefit themselves. "Bait and switch" on the part of a seller is not uncommon. Applied to the casualty insurance market, asymmetric information leads to the phenomenon called "moral hazard". For example, a person may over-insure his house and then burn it down to collect the insurance; or he may insure his warehouse, and burn it down after secretly removing the inventory. That is why insurance companies insist that the policy buyer must have an "insurable interest" (for example, in general he cannot buy fire insurance on someone else's houses unless he happens to hold the mortgage) and is not allowed to over-insure (typically, the policy holder has to bear a part of the loss). All of these are provisions adopted to deter moral hazard.

A particularly egregious form of moral hazard is the purchase of credit default swaps (CDSs) by people with no ostensible "insurable interest." Credit default swaps are essentially insurance policies against the default of bonds. It is reasonable for an owner of a bond issued by a particular firm to purchase a CDS on the bond so that he or she is protected in the event of a default of the bond because he does have an insurable interest. However, it makes very little sense to allow random people who do not own the underlying bond to buy CDSs on the bond because the only time that these buyers can benefit is in the event of a default of the bond, so that they will be hoping and rooting for a default, and perhaps doing everything else possible to bring about a default. CDSs should not be allowed to be bought and sold by non-holders of the underlying bond in China. And if a CDS holder sells the underlying bond, he or she should be required to dispose of the CDS as well, to eliminate any possible moral hazard.

[9] The exclusion of death by suicide in the early year(s) of a life insurance policy is also part of the mitigation measures used by life insurance companies.

The Incompleteness of Markets

An implicit assumption of the First Welfare Theorem is that markets are complete--not only spot markets for all goods, services and factors, but also all futures markets and state-contingent markets[10]. However, in practice, markets, including futures and insurance markets, are far from complete and are probably unlikely to be complete ever.

An interesting question is the following: Given that the markets are basically incomplete, is it the case that adding one more market will make the competitive market equilibrium better, in the sense that at least one economic actor is better off than before[11]? The answer is that adding one more market cannot make everyone worse off than before because everyone has more choice than before. If no one is better off, no change will be made. The worst that can happen is that the additional new market has no transactions, and so everything remains the same as if no new market has been introduced. If the competitive market equilibrium changes with the addition of the new market, then at least one economic actor must be better off than before. However, when there are two distinctly different sets of markets that are open, without one set being completely contained in the other, then one cannot say a priori which one of the competitive market equilibria is better.

Any realistic model of an economy has to be dynamic, or multi-period. Consumption and investment today depends on expectations about tomorrow. But since markets are not complete, uncertainty about the future is a fact of life. The government has the unique ability to influence and change expectations, not only by what it says, but also by what it does. The government can fill a void in the futures market and reduce the uncertainty in the economy by signalling the likely directions of its policies and in so doing shrinking the dispersion of expectations about the economy among the general public. An excellent example is the signal provided by the Southern Inspection Tour of the late DENG Xiaoping in 1992. It changed expectations in the entire country from negative to positive overnight, and the rest is history.

In the absence of complete markets, non-market coordination may be necessary for some projects to get off the ground. A good example of such necessity is from the

[10] The existence of markets for state-contingent commodities is a convenient "sleight of hand" introduced by the late Prof. Kenneth J. Arrow.
[11] Note that both competitive market equilibria, before and after the addition of a market, are efficient.

petrochemical industry, where investments are typically large and lumpy and characterised by significant economies of scale. Consider two firms in the industry: an upstream firm and a downstream firm. The upstream firm produces the processed raw material needed by the downstream firm to produce a finished product. Without the demand from the downstream firm, the upstream firm has no market. Without the supply of the processed raw material from the upstream firm, the downstream firm cannot operate. If futures markets were complete, presumably the upstream firm can sell its output forward and the downstream firm can buy the processed raw material forward as well. And then both firms will be in business. However, markets are not complete and such future markets do not exist. Thus, the two prospective firms will need to coordinate outside the market, or the same investors will have to invest in both firms. Either way, non-market coordination is necessary.

In general, the market system also cannot bring about development-leading infrastructure[12] on its own, because it requires a lumpy initial investment and the future demand is highly uncertain. In contrast, development-lagging infrastructure can be much more easily financed through the market because the demand already exists.

A final example has to do with the incompleteness of insurance markets. In the U.S., nuclear power plants cannot be fully insured as to potential liabilities by private insurance carriers (think Chernobyl, Fukushima, or Three Mile Island). They can only be insured up to a ceiling amount, and thus are all potentially under-insured, with a promise from the U.S. Government to do something if the worst happens. Once again, the government has to fill the void created by the incompleteness of markets.

The Role of Anonymity

As long as all economic actors are atomistic, anonymity is the rule rather than the exception. As an economy progresses from simple barter to a market, anonymity is essentially enabled by the use of money (cash and carry and there is no need to know who has sold and who has bought). However, anonymity of the seller can frequently give rise to fraud and irresponsibility. And repeated economic transactions typically take place between specific identified economic actors.

[12] For example, an urban public transit system.

In these days of big data, anonymity has become much more difficult to maintain, even for one-off transactions. A monopolistic seller, armed with big data, can practice almost perfect price discrimination. If the seller knows that a potential customer is a frequent visitor of Chanel and Hermes, he or she will quote a high price for the product. If a potential customer is a frequent visitor of Costco, the seller will quote a lower price. In so doing, the seller can price-discriminate almost perfectly, and appropriate most of the consumer surpluses that the buyers will normally enjoy in a competitive market. Thus, the same good or service can be bought and sold at two or more distinct prices. This outcome is clearly inefficient, because if there were a secondary market, the customer who is willing to pay a higher price can buy from the customer who is offered a lower price and both can be better off. Thus, big data is a threat to anonymity, and may enable near-perfect price discrimination by a monopolist, appropriating almost all the consumer surpluses. To avoid such price discrimination, safeguarding the privacy of information on the individual consumers is of utmost importance.

What the Market Cannot Do

The market system is best at the allocation of resources through the equilibration of supply and demand of goods, services and factors. However, the market system itself cannot stabilise an economy, that is, it cannot smooth out the cyclical fluctuations of the aggregate economy. Stabilisation, that is, bringing aggregate supply and aggregate demand into balance, is thus the responsibility of the government. In a sense, stabilisation is necessary because of the incompleteness of markets. The possibility of multiple competitive market equilibria may also require the government to make a choice or at least express a preference through its policies.

The market also does not redistribute—it takes the distribution of assets and liabilities (wealth including human capital) as given. The assets and initial endowments will essentially earn market returns. However, economic efficiency per se does not imply fairness or equitableness of the income distribution. And there can be many efficient allocations of resources that have very different distributional implications. It is the government's responsibility to decide whether a redistribution of income through taxes and transfers is desirable and if so to implement it.

One reason why many people around the world today have become disenchanted with economic globalisation is the perceived unfair distribution of income that results from globalisation. We know that in the aggregate, economic globalisation benefits every country that participates in it. However, within each country, winners and losers are created by economic globalisation. The winners are the exporters, importers and consumers of imported goods and services; the losers are the owners and workers in domestic industries the products of which are displaced by imports. In principle, there is a net gain for every country from economic globalisation, which, if appropriately shared, should be sufficient to make sure that there are no losers. However, the market system cannot and does not compensate the losers on its own. It is up to the government of each individual country to tax the gains of the winners and use the proceeds to compensate the losers, so that everyone can be better off from economic globalisation. But such redistribution has not occurred in many countries.

Finally, public goods, such as fresh air, blue skies, green mountains and clear water, urban mass transit systems, education, health care and elderly care, are not easily provided through the market system. The government will have to take the lead to invest in the provision of such public goods. Breakthrough innovation, which requires years or even decades of basic research, is also typically financed by the government and not through the market.

The Non-Uniqueness of the Competitive Market Equilibrium

There is no reason to assume that a competitive market equilibrium is necessarily unique. On the contrary, in general, one can expect multiple possible competitive market equilibria, each with a different welfare implication[13]. Moreover, there is also no guarantee that the set of competitive market equilibria is a convex set, that is, the equilibria are banded together close to one another. In fact, they can be quite far apart, and the government may be able to play a role in the choice of a particular competitive market equilibrium.

[13] Unfortunately, we cannot delve into the possibility of multiple competitive market equilibria except to say that it is probably the rule rather than the exception.

Concluding Remarks

Despite all the imperfections and inabilities, the market system is still indispensable for the efficient allocation of resources because it requires a minimum of centralised information as well as a minimum of governmental coercion, relying principally on each economic actor acting in his or her best self-interests. It is necessary to make the market system work better, so that overall economic efficiency can be achieved much more expeditiously. But one should also work harder on issues of macroeconomic stabilisation, distribution of real income, and the supply of public goods, including breakthrough innovation. These are areas in which the market system by itself cannot be effective.