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Market Mechanisms[1]

Introduction

A market is a means of organizing the exchange of goods and services based upon price, rather than factors such as tradition or political choice. For higher education there is not a single national market, but rather multiple and interrelated markets (Dill, 1997). These include the different product markets for university degrees, for academic research, and in many countries for university public services such as continuing education, consulting, and technology transfer. Universities also compete in separate markets for public and private funding and in different student markets such as markets for the ablest and the less able degree applicants.

Theoretically the encouragement of "perfect competition" in any of these higher education markets lessens the probability that society will over-invest or under-invest in higher education relative to the social benefits actually produced. But the achievement of "perfect competition" requires a number of assumptions. It assumes a sufficient number of both buyers and sellers to assure competition among them will provide discipline to university decisions about costs, prices, and product quality. It assumes purchasers have sufficient information about both price and the qualitative characteristics of goods and services to make economically "rational" choices. Finally, it assumes the prices of relevant goods and services effectively capture all the costs of production as well as the private benefits to be derived by consumers. However, current research on market-related national higher education policies suggests these conditions for perfect competition are rarely achieved (Teixeira, Jongbloed, Amaral and Dill, 2004; Ehrenberg, 2012). Instead, poorly designed market mechanisms for higher education often create incentives which distort academic behavior and decrease the economic efficiency of the sector.

Generic policy instruments have been identified for creating market competition in any sector (Weimer and Vining, 2016). First, public policies can influence the basic conditions of a market by altering the framework of laws and values within which institutions operate. Second,

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[1] In Jung Cheol Shin and Pedro Teixeira (eds.), *Encyclopedia of International Higher Education Systems and Institutions*, Springer Netherlands, in press.

public policies can affect market structure, principally by influencing the number of buyers and sellers, the pricing of goods and services, as well as by freeing and simulating markets. Third, public policies directly affect the conduct of buyers and sellers in a market, primarily by regulation and the provision of information.

Framework rules

Public policies frame or shape the basic conditions within which competitive markets operate. For example, the UK Education Reform Act of 1988 altered the framework rules of universities by eliminating academic tenure (Williams, 1997). This introduced greater competition into the UK academic labor market and helped foster a growing proportion of academic staff on fixed term contracts, an impact also observed in the higher education systems of other countries that have emphasized market mechanisms. But in the well-established market-based US system a similar growth in fixed term academic staff is associated with declines in first degree student persistence and graduation rates (Ehrenberg, 2012).

Another framework rule defined by government is private property. The much imitated US Bayh-Dole legislation of 1980 was originally motivated by a desire to speed academic knowledge to market (Dill, 2010). Therefore, the right to patent and license government-funded academic research was allocated by the law to US universities as a means of increasing university incentives for the transfer of technology to businesses. This policy was not expected to create a major new source of funding for US higher education, but the adoption of similar policies in other countries has motivated many universities around the world to invest in technology transfer offices and activities as a means of "cashing in" on their research outcomes. The majority of universities in the OECD countries (Dill and van Vught, 2010) are at best breaking even in these efforts, but many are suffering net losses from these investments.

National policies increasing the incentives for academic technology transfer may also negatively influence universities' public service role. A critical factor in the design of effective market-based public policies is careful delineation of the relevant market and players (Becker and Round, 2009). A "one size fits all" national technology transfer policy may diminish the contribution many universities have traditionally made to fostering economic development in their region (Lester, 2007).

Some "global" universities produce technology artifacts transferable worldwide, but economically influential knowledge transfer for most universities is a more local process. Comparative research in OECD countries revealed the knowledge transfer processes favored by many national innovation policies -- patenting, licensing, and new business formation -- were often not the most influential means by which universities influence local and regional development (Lester, 2007). Universities do contribute to the creation of new businesses. But more commonly they help upgrade mature industries, support the diversification of existing businesses into new fields, and assist in the transplantation of industrial sectors. In these roles traditional publications, the provision of skilled science and technology graduates, and technical problem-solving with local businesses through consulting and contract research are much more significant channels for fostering technical innovation than are patents and licenses (Cohen, Nelson, and Walsh, 2002).

This contribution to regional development is a role all universities with scientific and/or technical faculties, not just "world class" institutions, can perform. National policies for this university market should focus less on incentives for patenting and licensing and more on motivating development of an academic strategy for encouraging innovation in the local region.

Taxes and subsidies

In contrast to framework rules taxes and subsidies affect the structure of markets. US Federal tax policy has played a significant, if largely invisible, role in subsidizing higher education by providing incentives for families to invest in their children's' education and for individuals and corporations to make gifts to both private and public institutions (Geiger, 2004). Two particular forms of tax and subsidy, tuition fees and vouchers, directly affect the competitive structure of markets by altering the relative price of academic programs.

Tuition fees for public sector institutions are a form of tax designed to limit the over-consumption of publicly subsidized academic programs. Tuition fees are often justified as economically efficient because of the private benefits higher education conveys upon students in the form of increased lifetime earnings, improved career opportunities, and enhanced life chances (McMahon, 2009). Tuition fees may also be more socially equitable. Because students in higher education in many countries come disproportionately from middle and upper class elites, low or no tuition policies subsidize higher income students with the taxes of those of lower income.

Tuition fees also provide an explicit price for higher education. This price can create greater cost consciousness on the part of both students and universities, encouraging institutions to be more efficient and sensitive to students' needs. Tuition also provides opportunities for the emergence of private sector higher education and thereby can contribute to the potential responsiveness and diversity of the overall system. The evidence from international experiments with tuition fees suggests they do not appear to depress overall participation rates, but do increase administrative costs (e.g., for marketing), and increase institutional incentives to attract full-cost paying international students (Williams, 1997). But a major policy problem is assuring an economically efficient level of tuition as well as increases in fees.

The converse of taxes on the supply side are subsidies on the demand side, such as voucher systems which permit students to purchase academic programs at reduced prices. The voucher may be in the form of a government grant, a government subsidized conventional loan, an income contingent loan, or graduate tax (Barr, 2009). However, to work effectively voucher systems must be coupled with a policy implementing tuition pricing.

Barr (2009) has outlined a comprehensive tax and voucher model for financing higher education, which meets the economic test of efficiency as well as social equity. Barr's model requires: implementing variable university fees with a tuition fee cap; an income contingent loan system covering student fees and living costs, which includes an interest rate broadly equal to the government's cost of borrowing; loan repayments calculated as a percentage of a graduate's earnings and collected alongside her or his income tax. Barr's model suggests why market-based financing policies in numerous countries have proven ineffective. For example, loan systems in some countries do not cover both tuition and living costs, loans may not be income contingent nor collected with income taxes, and loan interest may not be pegged to the government's cost of borrowing. For example, the UK adoption of tuition fees and income contingent loan's repeated the mistake of treating all universities as a single market. Therefore, the initial government cap on tuition proved too low, requiring more public subsidy than was economically efficient, while the later increased cap has proved too high, inducing less prestigious universities to charge the maximum fee in an ill-conceived effort to spend their way to a global reputation. For these reasons a fixed tuition cap for all universities is unlikely to promote effective price competition or provide an incentive for socially beneficial institutional diversity.

Freeing and simulating markets

Many government efforts to introduce market structures into higher education are motivated by a desire to correct perceived failures in existing top-down government policy (Weimer and Vining, 2016). Such policies are designed to free currently regulated markets or simulate markets through various mechanisms.

Freeing higher education markets involves relaxing regulations in the public sector governing higher education finances, personnel, and curriculum, essentially devolving control over these decisions to the institutions. This type of deregulation permits institutions to set and recover their own fees, to develop their own personnel classification systems (effectively eliminating civil service regulations), to negotiate their own contracts, and to approve their own academic programs.

Aghion et al (2010) studied the effects of market competition and state regulation on the research performance of public universities in the US. The study focused on university outputs influencing technical innovation, which contributes to economic development. Output measures therefore included research publications as well as the university's impact on the inventive capacity of a state as measured by the number of patents generated. Most US public research universities possess "substantive" academic autonomy: freedom to select students, set curriculum, and appoint professors. But there is much greater variation across the states in "procedural autonomy:" a public university's freedom from centralized purchasing, from required approval of its budget by the state, and from government controls over the hiring and pay of academic personnel and staff or the need to follow civil service pay rules. The degree of market competition experienced by US public research universities also varies, influenced by the presence in a state of competing private research universities as well as by the proportion of a university's budget derived from competitively awarded federal research grants.

Aghion et al (2010) concluded research universities are more productive when they have greater autonomy and face increased competition. "Frontier research" is such complex product universities can effectively pursue it only if accorded the discretion to direct resources and researchers towards the most promising paths. Therefore, the most efficient system of external regulation permits research universities to control the use of their budgets, to independently choose the compensation for their faculty, and to hire whichever academic staff they most prefer. Also universities will more efficiently manage their resources if research funds are allocated through merit-based competition, via research councils rather than by university block grants.

When competition within a particular market cannot be guaranteed, government may attempt to simulate a market through adoption of internal or "quasi-markets" (Glennerster, 1991). In contrast to the "perfect market" condition of multiple providers and consumers a quasi-market utilizes a monopsonistic government agency to contract on the behalf of public consumers. Government research councils offering competitive grants are essentially operating as quasi-markets, and increasing numbers of countries are directing more of their research support for universities through such competitive processes (Dill and van Vught, 2010). The UK Research Excellence Framework (formally known as the Research Assessment Exercise) is a competitive quasi-market system which bases government funding of "block grants" of university research on evaluations of research quality including measures such as publications and citations.

Evidence suggests, consistent with Aghion et al's findigs, the competitive funding of research proposals via research councils has increased the productivity of the academic research enterprise and possibly also its quality, stimulating latent capacities for research that had not been previously effectively mobilized (Dill and van Vught, 2010). Universities also reported

adopting more strategic approaches to their research efforts with marked improvements in the internal organization and management of research programs and activities.

However, the positive benefits of competitive funding of university block grants for research via quasi-market mechanisms such as the former UK Research Assessment Exercise (RAE) are more debatable (Hicks, 2008). The focus on peer reviewed publications may suppress excellence, inducing a certain homogenization of research at the upper levels. The emphasis on publication counts encourages some researchers to become more calculating in their publication patterns, slicing their research into smaller topics and more numerous articles. The benefits of competitive allocations of university research funds also appear to be discontinuous creating a one-time shock to the overall system, which initially motivate increased research productivity in all universities eligible for the funding, but tends to dissipate over time (Crespi and Geuna, 2004). Quasi-market funding of research also further contributes to the observed stratification of universities, concentrating research in those institutions with richer resources, larger numbers of internationally recognized academic staff, and established reputations.

The challenges experienced with quasi-market mechanisms for funding university block grants for research were predicted by the principal-agent model in economics, but have been ignored by policymakers (Weimer and Vining 1996). In the case of the RAE (Henkel and Kogan 2010) for example, the complexities of measuring academic research have required continual adjustments in the output indicators, the costs of regularly peer monitoring university research performance have been high, and there have been continuing concerns about controlling inefficient cross-subsidies in universities, which produce the multiple outputs of teaching, research, and public service. A comparative study of EU countries (Himanen et al, 2009) revealed the UK RAE was less economically efficient than research evaluations which did not involve market competition.

Regulation

Regulations seek to alter the *conduct* of market behavior, primarily of sellers. One currently popular form of regulation in higher education is information provision. Consumer information on the academic quality of academic programs is believed to be critical for the effective functioning of higher education markets and the improvement of academic standards.

However, the many university guides and commercial league tables that have proliferated around the world do not effectively address the expected information deficiencies in the higher education market (Dill and Soo, 2005; Hazelkorn 2011). Information provision is likely to be socially beneficial only if quality rankings utilize measures linked with societally-valued educational outcomes, students use this information in their choice of subjects, and institutions respond to student choices by improving relevant academic programs (Gormley and Weimer, 1999). But the cost and complexity of developing valid indicators of academic program quality to inform student choice are significant. Furthermore, for-profit publications publishing many of these rankings already enjoy substantial sales and influence among opinion leaders, higher achieving students, and even university personnel by producing institutional rankings utilizing indicators of academic prestige, which have questionable validity as predictors of effective student learning (Pascarella and Terenzini, 2005). This focus on institutional prestige in many league tables distorts the assumed constructive link between information on academic quality and university efforts to improve academic programs. Influenced by institutional rankings many universities have responded to market competition primarily by "cream skimming" applicants for high achieving students, and expending increased resources and time on admissions marketing, student amenities, and investments to enhance research reputation (Dill and Beerkens 2010).

Furthermore, international research to date on student choice suggests many university applicants are "naïve consumers" whose education choices are influenced by a wide variety of educational, social, and personal factors, including the immediate consumption benefits of education (Dill and Soo, 2005). In mass higher education systems, quality rankings influence the educational decisions of a relatively small but growing segment of university applicants, primarily those of high ambition and achievement. This suggests that the choices of even better-informed university applicants may not effectively represent the interests or values of the larger public good.

Conclusion:

In her Economics Nobel Prize lecture Elinor Ostrom (2009) argued neither the regulatory rules of the state nor market forces are the most effective institutional arrangements for governing, managing, and providing complex public goods in self-governing organizations similar to universities. Thoughtfully designed deregulation and competitive mechanisms for research funding could contribute to improving university performance and efficiency as noted above. But crudely defined markets, the imposition of simplistic output measures for instruction, research and public service, as well as national policies encouraging centralized decision making in universities -- i.e., "managerialism" -- can distort the professional incentives, ethical values, and distribution of authority within universities which have traditionally motivated academic work in the public interest. The solution is to recognize that competitive markets are not naturally occurring phenomena, but creations of government, and therefore require careful design, implementation, and regulation if market failures are to be avoided.

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