

PEDAGOGICAL ETHICS AND ECONOMIC GROWTH IN THE UNITED STATES

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Abstract: This paper analyzes some of the factors that impinge on the residual-investment ratio of a growth model. It highlights some of the major challenges of acquiring and disseminating human capital in the US. Inhibiting conditions include the level of pedagogical ethics, institutional policies, financial infrastructure, and public policies that magnify the residual-to-investment ratio. Some of the challenges are presented in the form of pedagogical frictions, evaluative biases, and external costs that can degrade aggregate educational outcomes (human capital) and corresponding national income. The paper argues that the inhibiting factors have direct and implicit consequences for the empirical findings of endogenous growth models; especially because the inhibiting factors increase or decrease the value of human capital and, therefore, the growth residual.

Keywords: Education trilemma, Ethics, Human capital, SET, Total factor productivity

JEL Classification: D 63, I23, I25, I26, N10, O40

1. Introduction

This paper analyzes some of the factors that impinge on the residual-investment ratio of a growth model. It highlights some of the major challenges of acquiring and disseminating human capital in the US. Inhibiting conditions include the level of pedagogical ethics, institutional policies, financial infrastructure, and public policies that magnify the residual-to-investment ratio.

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To the best of my knowledge, though pedagogical ethics is functionally related to the acquisition of human capital, no paper has systematically discussed the impact of pedagogical ethics on economic growth or national output. Rather, over the years, the effects of human capital (investment) on economic growth and development have been conspicuously and extensively discussed elsewhere; for example, Smith, Goldin, Solow, Perkins et al., Goldin and Katz, Mankiw et al., Guisan and Neira, and Warburton 2020 (to list a few).

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A few papers have examined the economics of discrimination (Stigler, 1965, and Becker, 1992): *Economic debate has progressed since Stigler's 1965 piece. Garry Becker, a 1992 Nobel laureate, demonstrated in his 1971 'Economics of Discrimination' that discrimination from several factors, including race, reduces the real income of both its target and the perpetrator...*

Despite the progress, economists still pay scant attention to race relative to other topics. We have compiled data on every article in the top 10 economics journals over the past 10 years...Only 0.2 percent of those top 7,920 articles cover issues of race, racial inequality, and racism (Čihák et al.,2020).

Invariably, the acquisition of human capital has inherent challenges beyond the availability of pecuniary capital that is public or private. External challenges transverse a range of psychological proclivities, ranging from poverty (Petrilli and Wright, and Rebell Wolff) to gender and race discrimination (Smith and Anderson, Warburton, 2019). The effects of inadequate spending, evaluative criteria, and internal frictions have consequences for the acquisition of human capital and the propensities to increase or decrease access to human capital. In "The Acquisition of Human Capital and Economic Growth..."(Warburton, 2020), an effort was made to highlight some of the consequential outcomes of an endogenous growth model and the relevance of public investment to the growth residual; nothing was discussed in detail about the challenges and prospects of acquiring or delivering human capital. In reality, the models that support the acquisition of human capital and processes for acquiring human capital cannot be considered to be mutually exclusive. Consequently, this paper is an attempt to bridge that divide and show why pedagogical rectitude is functionally related to economic growth via the human capital channel. This paper will focus on four critical preconditions for the acquisition of human capital: (i) pedagogical ethics and the interaction of ethics and human capital for economic growth, (ii) the financial infrastructure for acquiring intermediate human capital, (iii) ethical evaluative criteria, and (iv) institutionalized opportunity costs for providing human capital (a trilemma). All of these preconditions have implications for growth models that endogenize human capital and their residuals.

2 (a) Perceptions and theories of ethics

Ethics is not generally well defined until humans develop acceptable principles of behavior that are widely accepted to engage with one another. I have noted elsewhere that ethics may mean different things to different people until binding laws define acceptable behavior regardless of cultural or idiosyncratic arguments (Warburton, 2021:164). Naturally, some behaviors are instantly opprobrious, because they are ocularly offensive to the sight and conscience of human beings. For example, humans are instinctively conditioned to act against the physical and unlawful deprivation of life, or the process of killing someone unlawfully. In effect, no law is required to arouse sympathy or anguish when someone is being physically and unlawfully deprived of life. The instinctive response can be unavoidably linked to a generalized moral sense. However, the same moral sense is not necessarily applied to intermediate measures that result in the same outcome of death, suggesting that humans have ambivalent or conflictive instincts of morality; for example, discrimination and the deprivation of

livelihood is not treated with the same sense of urgency and moral fervor, except by those with a deep sense of moral rectitude and conviction.

Hence, scholars have understandably wrestled with the concept of ethics. Boatright (2014) identifies six paradigms for understanding ethics: (i) peoples' welfare (common good), (ii) duty (the obligation to act), (iii) recognition of rights, especially if they are required by laws, (iv) manifestations of a legitimate sense of justice, (v) affirmative recognition and manifestation of justice, and (vi) a sense of dignity.¹ Obviously, ethical practices are contingent on expositions of virtue or the lack thereof. People show that they are virtuous in several ways, especially when they exercise self control, which is largely contingent on parenting (Wilson, 1993).

Virtue...is a state of character lying in the mean between two extremes; temperance lies in the mean between an excess of indulgence and a deficiency of pleasure (Wilson: 91).

A sense of duty and self-control has very close association.

Duty is the disposition to honor obligations even without hope of reward or fear of punishment. One reveals himself [/herself] to be a moral person not merely by honoring obligations but by being disposed to honor them even when it is not in his [/her] interest to do so (Wilson:100).

Discriminatory (unethical) behaviors cut across individual intent and institutional accommodation. A discriminatory act is isolated when a discriminator knowingly and intentionally discriminates, based on actual prejudice (Velasquez, 2002: 390). In the pedagogical environment, the dominant (grand) discriminator recruits or employs accomplices (an army of like-minded aggressors) to perpetrate and extend intentional and personal bias to oppress others in the academic workspace. Institutions can tacitly accommodate the malevolence or proactively prevent and expunge malevolent (unethical) acts.

Indicators of pedagogical malevolence include: (i) discrimination (Warburton, 2019), (ii) the pillaging of personnel files, (iii) altering the content of student evaluations, (iv) impersonating students on external and unsupervised electronic (informal) rating platforms, (v) knowingly validating flawed evaluative criteria, (vi) permitting inappropriate instruction by unqualified purveyors of human capital, (viii) selectively conducting evaluations after the end of a semester, (ix) illegally altering personnel profiles on electronic platforms, and much more. The disturbing and peculiar perturbations of harassment in the pedagogical environment do not necessarily increase demand for human capital; partly because residual or inferior quality of human capital is hardly attractive to consumers. Institutions with inferior supply of human capital will face enrolment (demand) challenges as consumers reject poor quality capital and what they symbolize.

As a policy matter, apart from outsourcing workplace aggression to dysfunctional institutions, academic research has not given much consideration to the indicators of academic malfeasance (recall Čihák et al.2020) though malfeasance has significant growth implications. Pointedly, institutional dysfunction cannot discourage the

¹ Ibid.

persistence of academic aggression and the challenges of acquiring intertemporal human capital (between high school and work).²

2(b) Pedagogical ethics and human capital

There are direct ways in which ethical values affect national output or aggregate education outcomes. Consider the restatement of Equation 15 in Warburton (2020). The 1992 transformation of the Cobb-Douglas function by Mankiw et al. is more revealing of the interaction of ethics and human capital:³

$$Y = K^{\alpha} (AH)^{(1-\alpha)}; \quad (1)$$

where Y is for output, K is for physical capital, H is for skilled labor, and A is for labor-augmenting technology that grows exogenously at rate g (see also Jones: 48). The model stipulates that individuals acquire capital by learning new skills, say in pedagogical institutions, instead of working. Therefore, H can be defined as the amount of time that is spent to acquire new skills in institutionalized environments and the total amount of raw labor (L) that is available for productive use in an economy. Implicitly, H is a function of the quality of capital that is conveyed and the infrastructure for conveying human capital, which interacts with labor augmenting technology. When human capital is contaminated and diminished by inferior capital, national output cannot be expected to increase or grow at a rapid rate, and the residual composition of growth models will be exorbitant and extraneous to technological advancement. That is, the contribution of human capital to output will be diminished and the residual will be enlarged.

Since human capital is obtained through pedagogical channels, pedagogical ethics is indispensable to the acquisition of human capital for economic growth.⁴ That is, the quality and quantity of human capital must be functionally related to national output or aggregate education outcomes and the degree to which pedagogical aggression (underlying factors) is controlling; especially when aggression has controlling and dominant effects on the delivery of human capital.

Any or all of the indicators of pedagogical microaggression (identified above) can be captured by gamma (γ), a sensitivity parameter that captures the response of outcomes to changes in the binary quality of human capital, which interacts with technological know-how. In effect, the parameter imposes a malfeasance effect on national income or aggregate education outcomes when inferior underlying conditions, including unethical

² See Warburton (2020) for a discussion of the discriminating disutility parameter. Electronic platforms can be utilized to surreptitiously espouse race, gender, and xenophobic bigotry. The dominant rating platform, *ratemyprofessor*(RMP), coercively maintains the names of instructors (during active employment)—with no respect for fundamental rights—though the company could not certify the sources of postings. Limited liability companies (LLCs) enjoy tax benefits from commercial revenues. To its credit, about a decade ago, the LLC belatedly deleted a racist impersonation. Students are not privy to all information and sloppy or brazen impersonators can easily get caught. However, not all impersonators are sloppy.

³ See discussions of Equation 15 in Warburton (2020)

⁴ For a discussion of the evolution of a moral sense and the impact of ethical lapses on technological innovation, see Warburton 2021:164-7.

practices, affect overvalued human capital. Consider a re-specification of Equation 1 in cross-sectional form:

$$Y_i = \alpha_i + \gamma H_{Ai} \dots + \varepsilon_i; \quad \gamma \{ < 0 \quad (2)$$

Ordinarily, the parameter, γ , can be expected to have a positive effect on Y_i (aggregate income or education outcomes). The dominating and external effects of malfeasance (aggression) can only reduce national income and increase the residual-investment ratio (ε_i/I_G) when human capital does not significantly contribute to economic growth or aggregate education outcomes; that is, public investment in education—in the public and private institutions that also show a preference for microaggressive behavior—may not necessarily have any significant or consequential impact on human capital and output. For ease of reference, Equation 3 (a restatement of Equation 21 (Warburton, 2020)) recalls the residual specification in dynamic form:

$$gy - a = (rK * gK) + (wL * gL) \quad (3)$$

where:

gy = GDP growth rate,

gK = growth rate of capital stock,

gL = growth rate of the labor force,

wL = the share of labor in national income,

rK = the share of capital in national income, and

$a = \varepsilon_i$ = omitted variable bias [residual, error, or TFP], a measurement puzzle; the TFP can be estimated with no precise theoretical meaning, except that it is an error in estimation. Rather than truly being TFP growth, a is simply the part of measured growth that cannot be explained by data on the traditional factors of production (Perkins et al: 70). It has already being stated that public investment must positively interact with capital and labor for the residual ratio to be smaller.

2(c). Self-motivation as academic ethic: Can self-motivation reduce the growth-residual-investment ratio?

In the US, the most profound response to the question dates back to the 1940s, albeit with some contemporaneous clusters. Towards the end of WWII, the GI Bill of Rights, officially known as the “Servicemen’s Readjustment Act of 1944,” was enacted to assist the veterans of WWII to adjust to the post-war economic conditions. As the plight of the WWII veterans became more intolerable, the US Congress was forced to pass a GI Bill to facilitate the acquisition of employable human capital. Some of the most comprehensive and captivating effects of the Bill can be found in the work of Altschuler and Blumin (2009).

Their very erudite and detailed research work provides insight into the gender, class, and ethnic tensions that characterized the American educational landscape of the 1940s and 1950s, and how the post-war socioeconomic conditions created opportunities for

millions who would have never had an opportunity to acquire human capital. More captivating, is the ethical commitment of the veterans to acquire education against incredible odds.

Veterans quickly acquired a reputation as mature, serious students. Instead of 'taking a ride on Uncle Sam's generosity,' they attended virtually every class, intently took notes [something that is becoming increasingly rare today], and asked questions. 'The window-gazers and hibernators have vanished,' one Harvard professor exclaimed....[A] civilian senior at Lehigh University in Bethlehem, Pennsylvania, complained, 'It's books, books, books all the time.

They study so hard we have to slave to keep up with them (Altschuler and Blumin: 95).⁵

Students with a modicum of ability, willingness, and effort to learn (ethical commitments), can achieve unparalleled success in institutions of higher learning, regardless of their social and economic backgrounds.

A slew of studies demonstrated that veterans failed less often, earned higher grades than their civilian counterparts at the same institutions, and, contrary to conventional wisdom, ascribed slightly less importance to grades.(Altschuler and Blumin: 96).

Title II made it possible for the veterans to become fourteen Nobel laureates, two dozen Pulitzer Prize winners, three Supreme Court justices, three presidents of the United States, and hundreds of thousands of skilled professionals by 2009.⁶ Public investment in human capital is highly consequential when it is properly targeted and students are highly motivated to learn (a conditional issue). That is, effective motivations can reduce the residual-to-investment ratio. Conversely, poor work ethic can increase the residual-to-investment ratio.

It is not unusual for microaggressors, especially impostors, to be lethargic and unproductive. Therefore, indicators of aggression and insecurity can easily coexist in academic environments. Bifurcated incidents of ineptitude and microaggression produce a supply of highly inferior and undesirable but protected human capital that does not interact very well with poverty and ill-motivations of students. It is very difficult to determine the reasons for the academic performance of students, but assuming the best case scenario without microaggression and ill-motivations, in recent memory, US students were not performing very well relative to some other countries at fundamental levels (see Table 1).

Theories tend to err on the supply-side of human capital. That is, poor academic performance is usually associated with poverty and lackluster motivations, emanating from psychological deficiencies; supply-side ethics of human capital is usually taken for granted.

⁵ By 1950, the US government had spent more money to educate veterans than it did on the Marshall Plan; excluding no one who had been on active duty for at least ninety days and had not been dishonorably discharged (op.cit.118). In the spring of 1947, merely 35 of the 6,010 veterans at the University of Minnesota were dismissed for poor grades.

⁶ Op.cit:106.

Table 1: Teacher Salary and Student Performance*

Country	Net Monthly Income (\$)	Weekly Hours	Income-hour ratio	Science	Math	Reading
United States	4,055	36.6	110.79	496	470	497
United kingdom	3,075	32.5	94.62	509	492	498
Germany	3,065	40	76.63	509	506	509
Australia	2,793	39.1	71.43	510	494	503
Japan	2,518	N/A	N/A	538	532	516
Canada	2,238	31	72.19	528	516	527

*Notes: Net monthly income is in 2005, purchasing power parity (PPP) dollars; Science Math, and Reading scores are average scores of 15 year olds who took the 2015 Program for International Student Assessment. Teacher salary is for instructors at the second-level (teacher job) who: (i) prepare annual programs of work for classes in secondary education establishment; (ii) give instruction and conduct discussions; (iii) maintain discipline in the classroom; (iv) prepare, assign and correct exercises; (v) set, administer, and mark tests and examinations; (vi) report on pupil progress to head teacher and parents. **Sources:** worldsalaries.org and pewresearch.org. The income-hour ratio is by the author. Background deficiencies and motivations are fundamentally exogenous to evaluative criteria at tertiary levels.

3(a). The cost of education, opportunity costs, and the residual ratio

The financial infrastructure for education imposes opportunity costs and choices that affect the residual- investment ratio. It is noteworthy that Equation 1 subsumes inherent qualitative and quantitative dimensions. While pedagogical microaggression reduces the quality of human capital, financial exactions reduce the quantity of human capital. Both outcomes (omitted variables) adversely affect the growth residual. As the cost of education increases, private markets become increasingly less attractive to finance the acquisition of human capital. As public funding of education dries up, inadequate financial capital exerts inconvenient ethical dilemmas for the providers of intermediate human capital.

Students and parents must find ways to finance the acquisition of human capital. Notably, the behavior of consumers is predetermined by laws of markets. When prices are low, other things remaining invariant, consumers will purchase more of a good or service. When prices change detrimentally, not every student will be predisposed to be saddled with long-term debt. Since education has external effects, there is a corresponding free-rider effect.

That is, the acquisition of education generates private and social benefits for which society must be willing to incur investment spending; others can benefit from a service without paying for it. Public spending will have greater effect if it can reduce the residual-to-investment ratio. Three issues are pertinent to a reduction of the residual-investment ratio:

- (i) academic ethic that is self-motivated,
- (ii) diminished academic microaggression, and
- (iii) increased supply of functional human capital (see Equations 1 and 3).

Those who dare to get an education without public investment, incur costs that are usually discouraging, partly because of the free-rider problem.⁷ Invariably, some can afford human capital without financial and emotional pain. Tables 2(a) and (b) provide data that discourage private investment in education.

Table 2(a): Federal Student Loan Portfolio (2017)

loan	Amount (\$b)	Borrowers (m)
Direct Loans	\$1, 150, 3.	34.2
FFELs	\$281.8	13.5
Perkins Loans	\$7.1	2.3
Total	\$1,439.2	42.9 *

Source: <https://studentloanhero.com/student-loan-debt-statistics/>

*44.2 million in Quarter1, 2018 (Federal Reserve Bank of New York)

In 2017, direct loans to students in the US are estimated to be about 1.2 trillion US dollars. Federal Family Education Loans (FFELs)⁸ amounted to 281.8 billion US dollars, and Perkins Loans amounted to 7.1 billion US dollars. The three categories of loans accounted for \$1.4 trillion on the federal ledger.

The number of student borrowers in 2017 is staggering, about 43 million (about 13 % of the US population); estimated to be about 44 million in quarter 1 of 2018. The financial requirements to obtain human capital are also reflected in the average amount of student debt across a variety of states, with the highest being New Hampshire and Pennsylvania in 2016. Utah and New Mexico recorded the lowest but relatively substantial amount of average student debt.

As more and more students fall into delinquencies, fewer and fewer funds will be available to finance human capital at higher borrowing costs. Enrolment will decline *ex ante*, and those who are already delinquent will have a hard time gaining access to credit markets to increase aggregate consumption and/or investment. Delinquencies do not stimulate economic growth. So why do some students care to incur long-term debt?

⁷ Student debts are problematic for other reasons. Neither the public nor the private sector can guarantee employment after graduation. Innovation is also constrained by inadequate public and private investments. Therefore, some students end up defaulting on their loans even before they have a chance to establish a credit history. For example, in the first quarter of 2018, student delinquency or default rate (90 days or more) was estimated to be about 10.7 percent by the Federal Reserve. New delinquent balances (30 days or more) amounted to \$31 billion for the same period. When delinquent balances for 90 days or more are taken into consideration, the value of unpaid balances is estimated to be \$31billion.

⁸ FFELs have been discontinued and such loans are now made under the Direct Loan Program (DLP). FFEL had four components: Subsidized Stafford, Unsubsidized Stafford, PLUS, and Consolidation. Perkins Loans were loans made to undergraduate and graduate students with “exceptional” financial needs.

Table 2(b): Debt by States (2016)

Highest Average Debt States	Average Student Loan Debt	Lowest Average Debt States	Average Student Loan Debt
1 New Hampshire	\$36,367	1 Utah	\$19,975
2 Pennsylvania	\$35,759	2 New Mexico	\$21,373
3 Connecticut	\$35,494	3 California	\$22,744
4 Delaware	\$33,838	4 Arizona	\$23,447
5 Minnesota	\$31,915	5 Nevada	\$24,128
6 Massachusetts	\$31,563	6 Florida	\$24,461
7 South Dakota	\$31,362	7 Washington	\$24,609
8 Maine	\$31,295	8 Wyoming	\$25,378
9 Alabama	\$31,275	9 North Carolina	\$25,562
10 Rhode Island	\$31,217	10 Oklahoma	\$25,856

Source: The Institute For College Access & Success and Federal Reserve made available by Forbes.com

Apart from varying levels of academic ethics, students make intertemporal decisions that do not internalize the social benefits of their investments and presume that second period discounted earning will comparatively surpass the combination of noninvestment wages (w_1 and w_2). Consider Goldin's representation of intertemporal choices and investment:

$$\frac{(W_{E2} / W_2) - 1}{1 + r} > \frac{C + W_1}{W_2}; \quad (4)$$

where W_{E2} is the second period wage that is associated with investment in education, C is the cost of education, including the opportunity cost of not consuming the money that is invested in the first period, W_2 is the non-investment wage in the second period, W_1 is the non-investment in the first period, and r is the rate of repayment (a discount rate when returns are discounted for the purposes of cost-benefit analysis) (see Goldin: 11). Students conclude that the discounted second period (private) return is greater than the returns of the two periods without the investment (loans). These considerations do not necessarily internalize work ethic but reflect great expectations.

3(b) The ethics of evaluative criteria

There is an apparent dissonance between work ethic and partial evaluative criteria (student evaluation of teaching (SET)). Lacking appropriate filters, SET endogenizes external biases in the form of race, gender and national origin. A fraction of students with deficient work ethic and undisclosed biases, exploit the SET to obtain favor and better grades. Consequently, the American Association of University Professors (AAUP) and scholars from diverse disciplines have called for better instruments of evaluation. Some have conceptualized the dissonance in terms of an education-poverty conundrum (Rebell and Wolff, and Petrilli and Wright).

Further, homogeneous pedagogical evaluations are insensitive to variations in disciplinary requirements and presume that the teaching requirements are identical; for example, the requirements for teaching economics are presumed to be identical to those of Civics, US History, and Reading. Onger (2009) observed that for over two decades, the subject of economics and its quality of instruction were consistently ranked among the lowest by undergraduate students in colleges and universities in the US. The finding positively correlates with High School performance in quantitative subjects (Clark, 1990, Cohn, Hult, Balch & Bradley, 1998, Hansen, 2001). Of course, cultural attributes diminish the value of foreign instructors (Bosshardt and Watts, 2001) though the foreign instructors, with relatively higher qualification and productivity, contribute more to the acquisition of human capital.⁹ Findings of racial biases can be found in the work of DiPietro and Faye (2005), and Huston (2005). The findings of older research have been corroborated by subsequent research. Consequently, some studies have authoritatively concluded that SET (mostly) does not measure teaching effectiveness (see also Boring et al., 2016) but biases.

In the fall of 2014, the AAUP conducted a survey to gather information about how colleges and universities evaluate teaching and use their findings.¹⁰ Numerous reports indicated that the abusive and bullying tone often seen in anonymous online comments appeared in student evaluations. Some females and faculty members of color reported that they received negative comments on appearance and qualifications. Anonymity seemed to have encouraged inappropriate and sometimes overtly discriminatory comments.¹¹

Vulnerable instructors who are sensitive and susceptible to bigoted and undue exposures are usually mindful of unseemly, intimidating, coercive, and unregulated electronic platforms that surreptitiously peddle bigotry. The RMP platform compulsively hosts the names of instructors (against their will until they change employment) without any control over the surreptitious sources of bigoted and discomfited contents that are prolifically transported into formal evaluations. That is, people cannot freely express their desires to be utilized as instruments (chattels) of exploitation in the market place while they are being unfairly devalued in formal and informal evaluations.

The shadowy platform has been continuously overrated by some institutions that ironically respect the privacy and rights of their employees. The platform provides good entertainment in bad taste for some formal evaluators of human capital; some of whom may also quietly internalize microaggressive propensities or behaviors. By so doing, institutions of higher learning may be ceding their authority (willingly or inadvertently) to preserve the integrity of formal evaluations by indifferently disavowing the privacy

⁹ See also Finnegan & Siegfried, 2000, Hamermesh and Parker (2005)

¹⁰ “The survey was sent by e-mail to approximately 140,000 faculty members, and 9,314 responses were received. Although these responses were informative and useful, the survey did have imperfections. While it was intended to reach all faculty members regardless of status, the response from non-tenure-track faculty members was lower than the committee had hoped: 75 percent of the respondents were tenured or tenure-track faculty members.” (Vasey and Carroll, 2016); see <https://www.aaup.org/article/how-do-we-evaluate-teaching#.XQmbLT-ryUk>

¹¹ Loc. Cit.

of their employees and the ability to maintain proprietary control over the integrity of the evaluative records of their employees; not a very good approach to increase the demand for human capital when some are selectively and unduly denigrated with corrupt intent. The biases are usually unrelated to content and subject matter, and call into question the integrity of formal evaluations that are so valuable but partly dependent on informal expositions and bigotry from unknown sources.

The net effects of vulnerability and intimidation are diminished work ethic and overvalued human capital; both of which do not significantly change the diminishing value of aggregate outcomes (review Equations 2 and 3) that are reliant on human capital.¹² Further, academic microaggressors salivate at the prospects of surreptitiously escalating their microaggression in obscure fashion. If SET is incontrovertibly biased, is there an ethical compulsion (obligation) to explore and embrace superior and uncontaminated instruments of evaluation that can add value to human capital and reduce the noisiness of omitted variables (residuals) in growth models with human capital?

As an ethical obligation, institutions that rightfully pay attention to supply side effectiveness must inevitably find ways to minimize apparent biases.¹³ Beyond learning-by-doing, econometric models must consider the accuracy and non-prejudicial indicators of human capital when estimating the value of intertemporal human capital. The next section examines the ethical choices and costs (trilemma) confronting academic institutions that provide intermediate human capital.

3(c) The ethical trilemma

The foregoing discussions underscore three important observations for increasing the supply of functional human capital: (i) academic standards (AS), (ii) student retention (SR) (demand side), and (iii) employment instability or stability (EI). Institutional suppliers of intermediate human capital do not have absolute control over all of the three preconditions for quality human capital; they are caught in a trilemma (see the illustration below). Essentially, they do not have control over the demand side though they can create enticing preconditions to enhance demand. Similarly, they do not have control over student retention, which is largely based on evaluative criteria and the conditions that will necessitate the continuity of learning in the first place. However, external (implicit) conditions can be created to modify evaluative criteria for retention (recall discussions of the ethics of evaluative criteria). Employment instability or stability is largely contingent on the financial infrastructure and the demand for intermediate human capital.

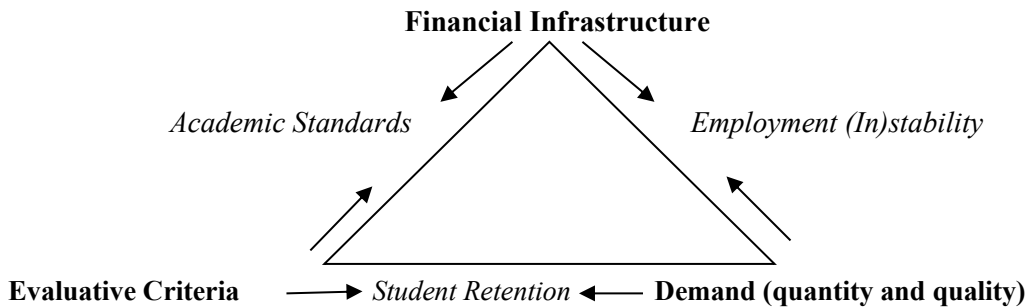
The financial infrastructure (FI) impacts academic standards and employment instability (EI) but not necessarily student retention, which is based on evaluative criteria (EC) and external factors that affect demand (DD) for human capital. FI can generate

¹² See also “A is for Adjunct,” by Sonner (2000). Sonner finds that several studies have shown that the valuation of learning is related to instructor rank. Research on teaching ranks has consistently shown that lower ranking faculty members give much higher grades than do senior faculty members; see also Johnson (2011).

¹³ Also see the AAUP report.

conditions to increase academic standards; for example, tutoring and scholarships to attract more of the best, brightest, and motivated. The criteria that are used to evaluate learning impact academic standards and the ability of students to proceed with their education. Finally, the demand for human capital ultimately determines whether the supply side should be increased (more employment) or decreased, and whether retention can be increased to acceptable levels. Demand and supply of human capital are also contingent on quantity and quality.

The contemporary pedagogical trilemma



A mathematical summary (simultaneous equations) succinctly restates the fundamental arguments:

$$\begin{aligned} AS &= f(FI, EC) + \varepsilon \\ SR &= f(EC, DD) + \varepsilon \\ EI &= f(FI, DD) + \varepsilon. \end{aligned} \tag{5}$$

Equation 5 warrants some exogenous considerations that have already been alluded to in the form of microaggressive perturbations (disturbances), which affect supply-side quality, employment practices, personal academic ethic, and opportunity costs that are associated with the acquisition of intermediate human capital. Institutions must ultimately decide how they are going to survive and the composition of compromises that will ensure their survival.

The ethical trilemma is an ocular representation of institutionalized costs and societal benefits that are associated with the acquisition of human capital. The management of these costs can lead to a reduction in the omitted variable bias (residual) of growth models that show a deference to total factor productivity (TFP). Explicitly, the value of endogenized human capital can be increased when the costs of acquiring human capital are minimized, thereby reducing the value of the growth residual. In the companion paper (Warburton, 2020), I argue that the residual can be more meaningful when it is estimated as a percentage of public investment in human capital; partly because private investments are not easily quantifiable for econometric reasons; but also because public investment can have direct impact on the acquisition of human capital, which should increase economic growth. Omitted variables that are associated with quality human capital can be highly consequential.

4. Concluding Remarks

While traditional models have argued that the residuals of growth models exemplify TFP, this paper argues that noisy residuals have alternative latent uses. I argued in the companion paper that residuals can provide very useful information when they are studied in relation to the factors that affect endogenized human capital. Further, land, which is traditionally considered to be static, is granted consideration because land can be improved for growth in output.

Therefore, the investment that is associated with human capital provides valuable information for analyzing growth residuals. This paper extends the discussions of human capital by considering some of the subterranean and forgotten factors that are inherent in the acquisition of human capital but are usually omitted in growth models. The omitted factors can impact the dimensions of errors (residuals) that are associated with traditional growth models. These variables, which are hardly visible or considered to be constituent parts of the formation of human capital, also have ethical dimensions that can impact overvalued human capital and national output. Ethical considerations reveal the extent to which more should be desired in the analysis of the acquisition of quality intermediate (intertemporal) human capital.

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