Profitability of qualified-labour-power production

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Abstract

In Baldino and Cabral (2013) we introduced the concept of qualified labour-power as the commodity produced by the school system. In the present article we outline a quantitative model to evaluate the profit rate of educational programmes. We compare a medical school programme with a teacher education programme at a public university in Brazil, from the point of view of profitability to the wealth of the nation's labour market and to the individual student. We argue that qualified labour-power is capital and that its owner participates in production in the condition of fixed capital. The general movement of the text points to the commodification of human beings through schooling.

Keywords: M*arx, Althusser, surplus-value, qualified-labour-power, profit rate of school programmes, wealth of labour market, political economy, Sraffa*

1. Introduction

At the end of Baldino and Cabral (2013) we offered a disturbing answer to Althusser's question: "*Why is the educational apparatus in fact the dominant Ideological State Apparatus (ISA) in capitalist social formations, and how does it function?*" (Althusser, 1976:93). We conjectured that "it is because at school the student learns, above all, to participate in, and accept, the conditions of production and seizure of surplus-value, the work done by one's fellow men" (Baldino, 1998: 77).

In that article, we introduced the concept of *qualified labour-power*, the commodity produced by the school system. We argued that the school economic process is a *cooperative joint venture* between the students and the institution, where the students perform the *double function* of *workers* and *capitalists.* As capitalists, they postpone selling their labour-power and seek to increase its value by depositing it in consignation as a guarantee to participate in the joint venture. As workers,

students employ their muscles and nerves on the object of work, which is their own labour-power, in order to qualify it through the schooling process.
As a consequence, the students' labour-power also appears as having a double function: *as exchange-value* it is both capital (in deposit) and a means of production (raw material), and functions as an object of work for students and teachers; *as use-value*, it is consumption of muscle and nerves that students apply in the learning work. Once the school process is concluded and the students get certificates, they reclaim possession of their labour-power, now qualified labour-power, to sell it in the market for a higher salary. The economic process constrains students into displaying a sort of 'split personality' that is at the root of many classroom contradictions: on one hand, they want their private capital to acquire maximum value; on the other, they seek to reach this goal with minimum effort; *as human beings, they are split by opposing economic interests*.

In this article, we show that, until its owner sells it, qualified labour-power functions as capital. We offer the framework for a quantitative model to evaluate the profit rate of educational joint ventures, with a specific focus on undergraduate university programmes. We examine profit both from the point of view of the student and from the point of view of both, public and private institutions. Since Marx did not leave us a theory of the state, we will assume that, in the case of public institutions, profitability refers to the institution's contribution to the wealth of the labour market of the nation, the state assuming the role of capitalist. The following is an argument in favour of the importance of this article: if we Google, <"*Wealth of labour Market*"> we find 153000 results; if we Google <"*Wealth of Labour market*" *Marx*> we find only one result (24th March 2015)! Sometimes silence is most eloquent; we are trying to show something that the official political economy does not want to see. "It is not that political economy knows and conceals it simultaneously; it is precisely that it cannot see so as to continue seeing only what it sees" (Karsz, 1974: 27).

2. Schools as places of economic production

Many authors agree that schooling increases the value of labour-power and hence that school is a place of economic production. As a commodity producer, school is subject to capitalist constraints. To express and react against these constraints, authors have been using words such as reification, commodification and dehumanizing (Boxley, 2003), alienation (Cleaver, 2000; Harvie, 2005), accountability and punishment (De Lissovoy and Mclaren, 2003), school-as-a-factory (Tronti, 1973), school as a market (Beach and Dovemark, 2007). These authors similarly refer to the

"appropriation of teacher time for personal gain at the expense of others" (Beach and Dovemark, 2009: 698).

The all-encompassing globalization of capital could hardly exclude schools. Simon Boxley has pointed out some consequences of capitalist pressure on the school system; he notices that "education in Britain has for at least the last century been conducted within capitalist economies of power and production, which have shaped its remit and directed its 'content'" (Boxley, 2003: 1). Harman describes the effects of capitalist impositions on teachers' work. The long-term imposition of the needs of capital on teachers is to force them "increasingly into conditions comparable to those of industrial and routine office workers with payment by results, assessment and appraisal systems, increased concern with timekeeping, and enhanced discipline codes (Harman, 2009: 334). Recently, Pais (2013) has argued that current Mathematics Education research undervalues economic aspects and points out the insufficiencies of socio-political studies to investigate failure in school mathematics in spite of all efforts to impart "mathematics for all". In Pais (2014) he argues that, due to the economic constraint universally imposed by the credit system (Vinner, 1997) in the capitalist mode of production, *mathematics is not for all*.

3. Is qualified labour-power capital?

Qualified labour-power is certainly a use-value. The circulation of capital may either eject use-values from production and consume them, or may include them into further production *as capital*. It is undisputed that the use-value of simple labour-power is entirely consumed in production, where it generates surplus value of the same order of magnitude as its own value; salary only pays for its reproduction. Qualified labour-power, in contrast, circulates to generate more wealth, far beyond the necessary labour time to reproduce itself. It is exchanged for a salary that pays for much more than its reproduction; it pays for its ability to set in motion the agencies of science and technology. Mature Marx explicitly refers to the capacity of qualified labour-power to generate wealth:

> But to the degree that large industry develops, the creation of real wealth comes to depend less on labour time and on the amount of labour employed than on the power of the agencies set in motion during labour time, whose 'powerful effectiveness' is itself in turn out of all proportion to the direct labour time spent on their production, but depends rather on the general state of science and on the progress of technology, or the application of this science to production (Marx, 2002).

The specificity of any labour-power as a commodity is that, upon selling it, its owner cannot promptly deliver it. The owner can only deliver it on a daily basis against monthly payments over many years. The owner sells the labour-power, but she does not lose it. Having received the monthly wage, she has sold the past labour-power, but she still owns the rest of her labour-power to sell in the next month. When the owner of simple labour-power retains her still unsold labour-power, she is the owner of a use-value that will be ejected from production by continuous consumption. The owner of qualified labour-power, on the other hand, retains a use-value that will be launched into production for the creation of new real wealth. The owner of the yet unsold qualified labour-power functions as a capitalist just as when she was a student and was in possession of the totality of its value.

> "The saving of labour time [is] equal to an increase of free time, i.e. time for the full development of the individual, which in turn reacts back upon the productive power of labour as itself the greatest productive power. From the standpoint of the direct production process it can be regarded as the production of fixed capital, this fixed capital being man himself" (Ibid, 513).

We feel safe to conclude that qualified labour-power is indeed capital.

4. A model for a quantitative approach

How to quantify the value added to the qualified labour-power through schooling? Does this increase correspond to the average salary of teachers and staff? Should we count the students' expenditure of muscle and nerves? Is it equivalent to the sum of all increased salaries during the average life span of the qualified labour-power's owner?

We will here offer the schematic lines of a quantitative model to answer these questions and draw some conclusions. By raising adequate data, our quantitative study can provide a measure of the rate of profit prevailing in educational programmes. The profit rate, from both the institutional and the individual levels, can provide a basis for either guiding or criticising government education policies. Although our focus will be on qualified labour-power produced at public universities, the model can be readily adapted to other school levels; we will also indicate how it can be applied to private institutions.

We chose to compare the medical school (M) and the mathematics teacher education (T) programmes at an important public Brazilian university.[1] We chose T because it is our field of research, and M because it produces one of the qualified labour-powers of highest value in the

market. Indeed, in M, 57 candidates compete for each of the first-year slots offered in the programme, while in T there are only 3 candidates per slot. In São Paulo[2] this number is about 250 candidates per slot. Additionally, when hired by the state, the initial salary of a physician is about 5 to 6 times higher than the salary of a teacher.

4.1. *Total capital:* $V = c + v + s$

Business bookkeeping only divides capital into *fixed* and *circulating*. We get a clearer picture if we also adopt Marx's division into *constant c* and *variable v* capital. The basic formula is $V = c + v + s$ where *V* is the produced *commodity value* (total capital), *c* is the *constant capital*, *v* the *variable capital* and *s* the *surplus value*.

> Total capital *C* consists of constant capital *c* and variable capital *v*, and produces a surplus-value *s*. The ratio of this surplus-value to the advanced variable capital, or s/v, is called the rate of surplus-value and designated s'. Therefore s/v = s', and consequently $s = s'v$. If this surplus-value is related to the total capital instead of the variable capital, it is called profit, p, and the ratio of the surplus-value s to the total capital C, or s/C, is called the rate of profit, p'. (MARX, 2010)

In order to avoid confusion between uppercase and lowercase letters, we adopt V for the *commodity value* or total capital; it is the value of a given number of units of qualified labour-power produced during a certain period, reduced to a monthly basis. Since in periods of economic stability, values become proportional to prices we will think of *V* as the average initial salary of graduates. In other words, consider a certain number of graduates from either T or M, a short time after graduation, and take their average monthly salaries.

4.1.1 *Constant capital* $c = c_F + c_c + rm$

In the formula $V = c + v + s$, the *constant capital c* is $c = c_F + c_c + rm$, where:

1) F*ixed capital* c_F comprises buildings, furniture, library facilities, computers, laboratory and audio-visual gadgets, museums, etc. This capital depreciates, so c_F is the amount of value that passes into the final produced total value of the commodity *V* each month.
2) *Circulating capital* c_c comprises consumption items such as chalk, electrical energy, laboratory material, displacement for visits, cleaning supplies, etc.
3) *Raw-material rm* is the value of the students' deposited labour-power, which is a special kind of circulating capital, subject to transformation as the object of work. Its value is the average monthly payment that students would get if, instead of enrolling in the

programme, they sold their labour-power based only on their high school diplomas or some other previous qualification.

4.1.2. *Variable capital* $v = v_{tp} + v_s$

Conceptually, the *variable capital v* is the advance in wages. In school, we should count the salaries of teachers and personnel v_{tp} plus the monthly average value v_s advanced by students for their support and transportation during their engagement in the school process. The value of the deposited labour-power *rm* can be estimated as proportional to their room and board expenses v_s; we write $rm = \beta v_s$. If the programme enrols mostly students who are poor, yet able to support themselves, the factor β is greater than one; it is less than one if students come mostly from well-off families. Indeed, students from richer families have higher expenses in quality of food, leisure, sports, clothing, etc. They tend to maintain this consumption level throughout their school years. However, if they were to sell their high school qualified labour-power, they would not get much more than would students from poorer families, who live on much smaller expenditures. We call β the *social factor*.

4.1.3 *Surplus-value* $s = s_{tp} + s_s$

Conceptually, the *surplus value* is the unpaid work. Of producers in cooperative work, such as we consider the *joint venture* between the students and the institution, Marx says "their labour consists of paid labour + unpaid surplus labour" (Marx 2002, XXI-1330), a fundamental reference for our argument in Baldino and Cabral (2013).

Accordingly, we will consider s_{tp} the unpaid work of teachers and personnel, and s_s the unpaid work of students. All the payment for the educational joint venture comes from selling the qualified labour-power, which circulates after the students graduate. We consider the salaries of teachers and personnel as an advance of this future sale, provided by the state through tax collection. Teachers and personnel get market price for the sale of their already qualified labour-power; in public institutions their salaries are regulated by law. Therefore, the average monthly investment s_{tp} may be greater or smaller than the part of the total *V* produced due to the expenditure of muscle and nerves of teachers and personnel.

Some students abandon the programme. They make the investment and work for a certain time, but they do not collect their payment share. Other students fail some courses and lag behind. If a student takes, say, nine years to complete the expected six-year medical programme, she will have worked one third more than the necessary time, but collect the same share as their classmates, so she is paid for only 2/3 of her work. The paid part is already accounted for in the variable capital, v_s; the remainder 1/3 is unpaid work and counts as s_s. The rate of surplus value for this student is $\frac{s_s}{v_s} = 33\%$. Each undergraduate programme has its historical average rate of student surplus-value; we will call it λ and we will refer to it as the *rate of failure*. Therefore, the total unpaid student labour in the programme is $s_s = \lambda v_s$. If the student graduates within the expected timeframe, $\lambda = 0$ and she gets her full investment back. The rate of surplus-value of the whole programme may be different from λ; it is $\frac{s}{v} = \frac{s_{tp} + s_s}{v_{tp} + v_s}$.

In summary, monthly magnitudes relative to a given number of units of produced qualified labour-power are:

$$V = c + v + s = \text{commodity value}$$
$$c = c_F + c_c + rm = \text{constant capital}$$
$$v = v_{tp} + v_s = \text{variable capital}$$
$$s = s_{tp} + s_s = V - c - v = \text{surplus value}$$
$$s' = \frac{s}{v} = \frac{V - c - v}{v} = \text{rate of surplus-value}$$
$$p' = \frac{s}{c + v} = \frac{V - c - v}{c + v} = \frac{V}{c + v} - 1 = \text{rate of profit}$$

5. Comparing profit rates

Prior to any introduction of numeric data, the above formulas allow some qualitative comparison between educational programmes. We compare M with T from the point of view of their profitability to the wealth of the nation's labour market. Substituting 4.1.1-3 into the profit formula, we get the following expression, which we now analyse:

$$p' = \frac{s}{c + v} = \frac{s_{tp} + \lambda\, v_s}{\left(c_F + c_c + rm\right) + \left(v_{tp} + v_s\right)}$$

Consider the constant capital *c*. A moment's reflection shows that fixed capital c_F is hugely larger in M than in T, since it includes at least the installations of a morgue and a hospital; in T,

classrooms nearly suffice. In M, the circulating capital c_c includes all items consumed in laboratories, while in T these items either do not exist or are included in fixed capital. As for the raw material *rm*, we must consider that the labour-power in deposit is already qualified labour-power, having been qualified in previous schooling. The raw material *rm* has similar market values as labour-power that is not yet graduated.

Consider the variable capital $v = v_{tp} + v_s$. Salaries of teachers and personnel, being regulated by law, are the same in M and T. Since there are many more candidates per freshman spots offered in M than in T, we infer the recruited students in M have had better preparation, which generally indicates that they come from better-off families. Therefore, their investment in living expenses v_s during school has at least the same value as in T.

Considering the unpaid work *s* in the numerator, local tradition maintains that the rate of abandonment and the rate of λ is historically very low in M, probably due to the strong entrance selection. The comparison indicates a larger denominator and a smaller numerator in M than in T. Therefore, up to this point, our analysis shows a lower profitability in M than in T. We still have to consider the unpaid work of teachers and personnel s_{tp}.

In periods of economic stability, private capital tends to flow into sectors that are more profitable, so that the profit rate tends to become the same in all sectors of the economy. Therefore, if the state acted as a private capitalist, *p'* would become the same in M and T and, from the point of view of the wealth of the labour market, investments in M and T would become equivalent. In this case, according to the formula, we should have a greater value of unpaid work among teachers and personnel in M in comparison with T.

However, this is not what happens, the state does not behave as an independent capitalist. The recent economic crisis has shown that, actually, private capital controls state capital. From the point of view of private capital, investment in education courses like T is much more profitable than investment in M. Then the question is the following. Why would private capital be interested in increasing the profit rate of M or keeping its profitability in T?

One could argue that if, due to political measures, the profitability of M increased, capital would simply move there. Capital would be politically neutral. What this argument fails to consider is that,

although Capital is an *automatisches Subjekt*, it is not single-headed. It is more like the Lernaean Hydra. Its seven heads have only one common desire: growth; and they have only one way to get it: exploitation of labour-power. However, their agreement ends at this point: exploitation requires repression and repression has different costs in different productive sectors. Moving also has a cost. Each head is resistant to moving to another sector; it would rather defend its niche of profitability. Therefore, why should Capital be interested in raising the profitability of M? This is where class struggle begins, as testified by the quarrel around the public health insurance option in USA. Insofar as private capital is in control, the state is constrained to maintain the lower profitability *p'* in M, reducing the unpaid labour time s_{tp} as well as the rate of failure λ, the two magnitudes that appear in the numerator of *p'*. Indeed, this is what happens. All the teachers in M hold full-time positions in the university, but those who teach in the three final years, the so-called clinical years, have a special regime, not foreseen in law. They give their classes in the university hospital where they get extra payment from several health insurance companies. The rules are nebulous but we estimate that the total amount is at least twice their university salary. Besides, they are allowed to keep their private medical offices in spite of having full time public jobs. Their labour time in the university is in fact cut off. Since the university salaries are the same in both programmes, the extra income that teacher receives in M implies a drastic reduction of their share of unpaid work. Therefore, s_{tp} in M is less than in T. The same trend operates with respect to the rate of failure λ, which is held at near zero in M.

This completes our analysis. Since all magnitudes in the denominator of the formula are greater and all magnitudes in the numerator are smaller in M than in, it is in the interest of private capital to keep a lower profitability of M. Extrapolating this result, we conclude that, insofar as private capital controls state capital, *the profitability of capital invested in health as it contributes to the wealth of the labour market is constrained to be kept low*. This explains the chaotic situation of public health care in Brazil as well as the proliferation of courses on education.

6. The private institution

In private institutions students pay tuition. We can consider this payment as an agreement between the partners of the educational joint venture concerning the anticipation of profits that are only realised after the sale of qualified labour-power in the market. In order to make this point clear, consider a public institution as we have done thus far, where the partners are the government and

the student. Suppose that, for some reason, these partners decide that, upon graduation, the produced commodity, namely, the qualified labour-power, will not fully belong to the student; the agreement may be that a certain percentage of it will belong to the government. The partners may agree that the value transfer will take place in monthly payments for a certain period after graduation. This is similar to student loan programs. Instead of such an agreement, the partners may decide that the student will make his monthly payments *while still in school, in which case* such payments are called "tuition".

From the point of view of value added to the *wealth of the labour market*, it does not make a difference whether the student pays tuition to the government or to some agent whose duties are determined by law, namely, the institution's owner, be it an individual or a firm. From this point of view, in private institutions it is indifferent whether 1) the student pays tuition to the school owner and the government collects taxes or 2) the student pays tuition to the government and the government transfers part of it to the school owner (educational credit). We leave aside consideration about loans contracted either by the student or by the capitalist as well as the corresponding interest rates. From the point of view of the wealth added to the nation's labour market it is all the same.

The difference between private and public educational programmes is that in the private ones there is a watchful agent paying constant attention to the rate of profit. The comparison between the rates of profit in M and in T explains why private universities very seldom offer medical courses and very often open new courses, for instance, in law. Owners of law schools pay so much attention to the profit rate that law graduates in Brazil, like in other countries, have to pass an exam given by the lawyers' class association before they can practice the profession.

To compute the rate of profit in private institutions, it suffices to subtract tuition from *V*. Nevertheless, a difficulty arises: we can compute, *V*, *c* and *v* on a monthly basis; *s* also results to be a monthly value. However, *V* is the reduction of a life span sale to a monthly basis, while tuition is paid monthly only during the student's engagement in the programme. We must use something like a Penn World Table [3] in order to first estimate the total magnitude of *V* obtained during an average life span and the total tuition paid during the course. Only then can we subtract *V-c* and reduce it to a monthly basis. In this process, we should also consider interest rates. Therefore, in order to illustrate the consequences of our economic model, we have chosen to focus on public institutions.

7. Rate of profit from the point of view of the individual student

From the point of view of an individual student, she invests a constant capital $c = rm$ and a variable capital $v = v_s$ in the joint venture; she estimates her unpaid work by the rate of failure $s_s = \lambda v_s$. In the end, she receives *V*. The rest of the constant and the variable capitals, namely the capital invested by the institution, c_F, c_c and v_{tp} do not concern her. The rate of profit for the individual student is:

$$p' = \frac{V - c - v}{c + v} = \frac{V - rm - v_s}{rm + v_s} = \frac{V}{rm + v_s} - 1$$

Nevertheless, according to the historical rate of failure, she does not expect to graduate in the official time. The delay appears to her as an extra investment. From her point of view, the total investment is $v_s + s = v_s + \lambda v_s = (1 + \lambda) v_s$ and the rate of profit is:

$$p' = \frac{V}{rm + v_s + s_s} - 1 = \frac{V}{(\beta + \lambda + 1) v_s} - 1$$

If λ is too high and *p*' becomes too small for her expectations, she will look for another programme, unless *V* is high enough that she decides to run the risk. It may also be that the student comes from a well-off family, so that her expenditure v_s during school is much larger than her deposited *rm* labour-power. In this case, in $rm = \beta v_s$ the social factor β is small and may compensate for a high failure rate. This explains why schooling is mandatory for children of rich families, whereas, among students with a higher social factor, any increase in failure rate effectively expels children from school. It also explains why many students from richer families tend to look down at school and teachers, a behaviour evident in the 'best' private institutions. In any case, a relatively high failure rate tends to decrease the number of enrolled students; a program that maintains a stubbornly high λ seeking some kind of 'total quality', risks a shut down for lack of students.

Since it appears in the denominator, no student will be willing to increase the failure rate during school years; on the contrary, they will tend to associate in their efforts to reduce it. All teachers have some experience with this spontaneous association that manifests itself mainly before midterms and final exams.

8. Rate of profit from the point of view of the institution

The students' investment v_s may even be negative, as is the case of some military academies that provide free room and board. To estimate the output V we have considered a fixed number of units of qualified labour-power produced during a certain time, say, one year. However, the number of students admitted in the programme each year is considerably larger. Keeping the other variables fixed, we can think of the students' investment v_s as the number of students enrolled in the programme.

According to the formula $V = c + v + s$ the will of Capital is to maximize *V* with a given *c*, a necessary *v* and as high a rate of profit s/V as possible. The programme manager, be it the government or the capitalist, may count on several variables to control the profit rate. The capital invested by the institution is $\alpha = c_F + c_c + v_{tp}$. In the following analysis we assume that the coefficient β in $rm = \beta v_s$ remains constant; we will focus on the variations of the rate of profit as a function of the rate of failure λ, the surplus value s_{tp} extracted from teachers and personnel, and the number of students v_s enrolled in the program. We can write the general rate of profit as:

$$\mathrm{p}' = \frac{s}{c+v} = \frac{s_{tp} + s_s}{c_F + c_c + rm + v_{tp} + v_s} = \frac{s_{tp} + \lambda v_s}{\left(c_F + c_c + v_{tp}\right) + \beta v_s + v_s} = \frac{s_{tp} + \lambda v_s}{\alpha + \left(\beta + 1\right) v_s}$$

First, observe that increasing the rate of failure increases the rate of profit; hence, what the school system offers the students is a risky venture: the value of the qualified labour-power produced by the programme depends on how many students have lagged behind. This confirms our ancient statement: "at school the student learns, above all, to participate in, and accept, the conditions of production and seizure of surplus-value, the work done by one's fellow men" (Baldino, 1998: 77). Keeping α and β fixed, the variation of v_s is only possible if the number of enrolled students vary. There are several ways to increase s_{tp}; the easiest is to extend the teachers' journey through 'voluntary' take-home tasks. Recently, our local private schools union, worried about this form of extraction of surplus-value, launched a campaign called "strike on Sundays". The rate of failure is the easiest parameter to control. Due to government policy in the public schools and to management strategy in the private ones, in most Brazilian elementary and high schools, λ is almost zero.

We get some insight into the function of school programmes assuming that λ and s_{tp} remain constant and considering *p'* as a function of the number of students v_s. We take the derivative of the profit rate:

$$\frac{\P p'}{\P v_s} = \frac{\P}{\P v_s}\frac{s_{tp} + / v_s}{a + \left(b+1\right)v_s} = \frac{\left(a + \left(b+1\right)v_s\right)/ - \left(s_{tp} + / v_s\right)\left(b+1\right)}{\left(a + \left(b+1\right)v_s\right)^2} = \frac{a/ - s_{tp}\left(b+1\right)}{\left(a + \left(b+1\right)v_s\right)^2}$$

This derivative is positive if the rate of failure is relatively high with respect to the extracted surplus value from teacher and personnel, say $\alpha\lambda > s_{tp}\left(\beta+1\right)$ or, which is the same, if $\frac{s_{tp}}{\alpha} < \frac{\lambda}{\beta+1}$. In this case *p'* will only increase if v_s increases. The institution is working on curve 2 in figure 1.

However, as explained above, from the point of view of the student, a high λ implies that the number of enrolled students tends to decrease and the profit rate falls. The manager will then try to increase s_{tp} and reduce λ so that the institution operates on curve 1 (Fig. 1). Now, the relatively low failure rate may attract more students into the programme and the profit rate will fall. It seems that the optimal situation is $p' = \frac{s_{tp}}{\alpha} = \frac{\lambda}{\beta+1}$; in this case, *p'* does not vary with the number of students and the manager can concentrate on the other variables. Some private Brazilian universities do not aim at profit and generally operate on curve 3 (Fig. 1) where $s_{tp} < 0$. This occurs in institutions that include programmes aimed at a lower value segment of the qualified labour-power market. To avoid operating at loss, the best of these universities receive help from the government in the form of fellowships and educational credit for low income students. This policy keeps v_s artificially greater than the critical value $-\frac{s_{tp}}{\lambda}$.

We will not go into further analysis of these curves (Fig. 1). We only remark that, from the overall economic point of view, the equilibrium situation $p' = \frac{s_{tp}}{\alpha}$ should tend to match the general rate of profit of the economy p'_0. If $p' = \frac{s_{tp}}{\alpha} > p'_0$, more capital will flow into education so as to increase α and re-establish equilibrium.

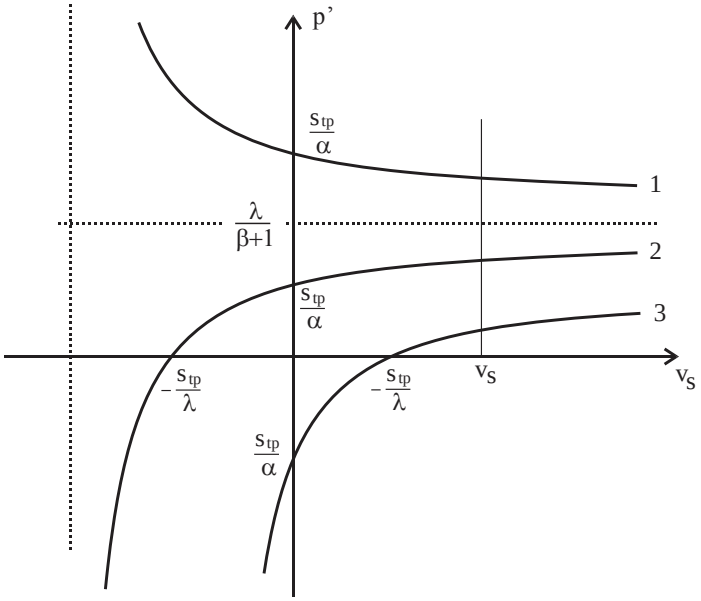

Figure 1. Profit rate as a function of the numbers of students

9. Final words

These are the basic lines of a very simple economic model, since it only uses elementary algebraic operations. Nevertheless, it opens many possibilities for further investigation, either by looking for the interrelations among the variables or by making precise the turnover movement of capital from one year to the other, inside the same program. Our study suggests the introduction of a new equation into the model of Sraffa (1960) to take into account the production of this special commodity, the *qualified labour-power*. It would be the *school equation*.

Comparison of profit rates at different universities offers a new challenge. Identical programmes in different universities may have the same economic data and yet produce qualified labour-powers that command very different market prices. Investment banker programmes, for instance, need small fixed capital but lead to high remuneration. One can question the law according to which prices tend to match values in situations of economic stability, or one may say that the difference is due to different investments in marketing and advertising. We prefer to think of a difference in *sign-values* (Baudrillard, 1972). The sign-value results from extra unpaid work of all, students, teachers and personnel, as they appreciate the program and boost the institution' *brand value*. However, only graduates collect a share of this collective work. We are reluctant to adopt this point of view because sign-value is not a Marxist concept and we ignore whether we can rigorously extract it from the Mature Marx theory, as we did with qualified labour-power in Baldino and Cabral (2013).

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[1] We will not disclose its name or our information source.
[2] Universidade de São Paulo, USP.
[3] http://en.wikipedia.org/wiki/Penn_World_Table