

A PRELIMINARY DRAFT
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MEASURING the LABOUR VALUE: 1988-2006 TURKISH ECONOMY
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1/ WHY do WE MEASURE?

What we expect from a theory whether a social or natural science is to help us in understanding and solidly interpreting the reality if not to change it. As Marxist economists dwelling to find out the capitalist reality, we absolutely need to calculate some theoretical categories which are the rudimentary for understanding this social reality although obviously it is not the only apparatus for understanding. It means that theory has to involve empiric analysis, and has to measure to interpret reality. This is also a way of checking the theory itself.

2/ MARXIST THEORY GETTING A CERTAIN POINT in 80s and 90s by ELIMINATING GENERAL EQUILIBRIUM ASSUMPTIONS

As social scientists and specifically Marxist economists hopefully we have more than one theoretical choice to look at the empirical level. Among these, some interpretations are evidently not satisfying the inner theoretical consistency requirements and some other interpretations apply to assumptions coming from neo-classical theory. These theoretical issues have been highly debated since 1980s and as a result of these debates apparently some conclusions are reached; some interpretations are eliminated. Obviously, there are still lots of issues to discuss. However one can easily accept that post-1980 period frees Marxist economists from structure of the general equilibrium modeling which is inconsistent to Marx. This emancipation is more important than still continuing minor discussions which are never expected to cease.

3/ TSS INTERPRETATION

In order to make empirical research, I apply to TSSI (temporary single system interpretation) which is developed by mainly Andrew Kliman and Alan Freeman. Among the post 1980 interpretations, the other SSIs (single system interpretations) can be also chosen, because they both have eliminated the value and price distinctions from the Marxist theory and united them in a single dialectical system as it should be. What differs between TSS and SSI is the time aspect of analyses. I think this is also another important aspect originating from Marx's own theory.

One should also note that TSS approach is not a homogenous one. It covers some variance. For example, whether to calculate the value of money at the gross value produced or net value added is an example of debateful issues within the approach. I prefer to use the first method, considering that value of money is about the whole economy including the capital. In my view, this does not lead a double counting problem because of the time factor.

4/ AN EMPIRICAL APPLICATION: TURKISH ECONOMY AS A CASE STUDY

It is important to continue to debate. However it is also important to start to use these theories in order to analysis the empirical level. As stated above this is also a way of checking whether the theory is correct or not. However, none of the interpretations, as far as I know, has gotten a chance to be applied appropriately yet.

When trying to apply a theory, researcher faces some methodological, statistical problems to be solved. This can contribute to the theoretical debate with new questions arised and with solutions proposed. In my dissertation, my aim is to dwell on these methodological/statistical/practical problems by choosing the 1987-2006 period of the Turkish economy as case study.

Here I want to summarize only the methodological aspects and only my main results , leaving other contents aside (such as; the question of value in economics science – difference between labour value, utility value-, Marx’s contributions to labour theory of value –difference between Smith, Ricardo and Marx -, discussion on the productive and unproductive labour concepts in literature and the ‘correct’ definition of productive labour to use in empirical analysis, and lastly my specific numerical results reached at the end). In short, here I confine the abstract to show how the empirical results are obtained and how the methodological problems are overcome.

4.1/ DEFINITION OF MELT AND OTHER VALUE CATEGORIES

MELT is defined by total prices (total amount of wages, cost of production and profit) divided by total values in hours (labour hours worked and the value that comes from the constant capital) at gross level.

By symbols:

σ : MELT;

V^{TL} : Total wages in Turkish Lira (TL);

C^{TL} : Total expenditures for means of production in TL- (and depreciation of fixed capital);

S^{TL} : Total profit in TL;

X^{TL} : Total prices at gross level; GNP plus prices paid for circulating capital;

L^H : Total labour hours worked;

V^H : Variable capital in hours;

C^H : Constant capital in hours;

S^H : Surplus value in hours;

“t”, “t-1”: subscripts denote time period or turnovers of capital;

“TL” and “H” superscripts denote respectively that the variable is in Turkish Lira and hours.

$$\sigma_t = \frac{C_t^{TL} + V_t^{TL} + S_t^{TL}}{L_t^H + C_t^H} = \frac{X_t^{TL}}{L_t^H + \frac{C_t^{TL}}{\sigma_{t-1}}} \quad (1)$$

$$C_t^H = \frac{C_t^{TL}}{\sigma_{t-1}} \quad (2)$$

$$V_t^H = \frac{V_t^{TL}}{\sigma_t} \quad (3)$$

$$S_t^H = L_t^H - V_t^H \quad (4)$$

The first formula gives the definition of MELT, the second one defines constant capital which is money paid to means of production divided by the MELT of previous period/turnover. The third one defines the variable capital as wages divided by current MELT. The fourth equation finds surplus value as a subtraction of variable capital from total labour time worked.

4.2/ RETHINKING THE TURNOVER OF CAPITAL FOR THE CALCULATION OF MELT

My main contention is that it is theoretically improper to use annual statistics when calculating value of money (or inverse of it, i.e. monetary equivalence of labour time-MELT). Instead of annual statistics, theoretically created turnover statistics must be used. Because only when the capital completes its turnover, the capitalistic value born into life along with market prices¹. Value and price appear only by the end of each turnover. Therefore what is theoretically appropriate is to calculate the MELT at the end of each circle. In order to do this, we need theoretically constructed circuit statistics.

Let's try to explain why.

We have three levels of understanding of reality:

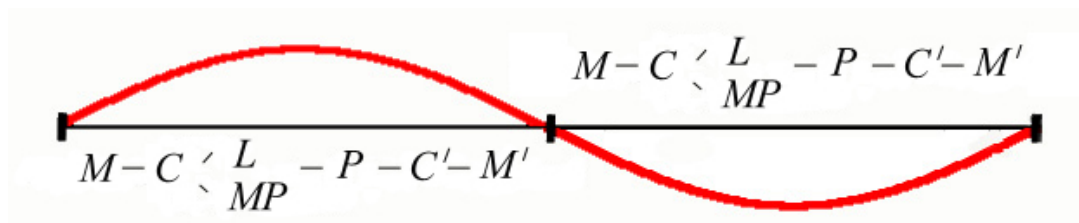
- i) At the most abstract level we have theoretical definition of capital's circuits and cycles of turnover.
- ii) At the most concrete level, we have empirical reality itself.
- iii) Also we have statistical data, as a redesign of reality.

To illustrate the differences and relations among these three levels, some drawings will be helpful.

Let's define the entire turnover time of capital below by the help of sine waves. Every time when the wave intersects with x-axis (depicting the passing of time), capital completes a turnover and a new circuit begins. The wave starts with the advance of money capital. Labour power and means of productions are bought with this money and production is started. At the end, surplus value is formed by realization of capital; here wave intersects with the line. The same point on the sine wave also depicts the starting of a new circuit. Due to the fact that circles of turnover are in sequential order. Sequence means one circuit follows after another but no new circuit starts before completion of the previous one.

¹ It is not necessary for market prices to be production prices because any price can be attached to these commodities at the market according to the conditions of supply and demand.

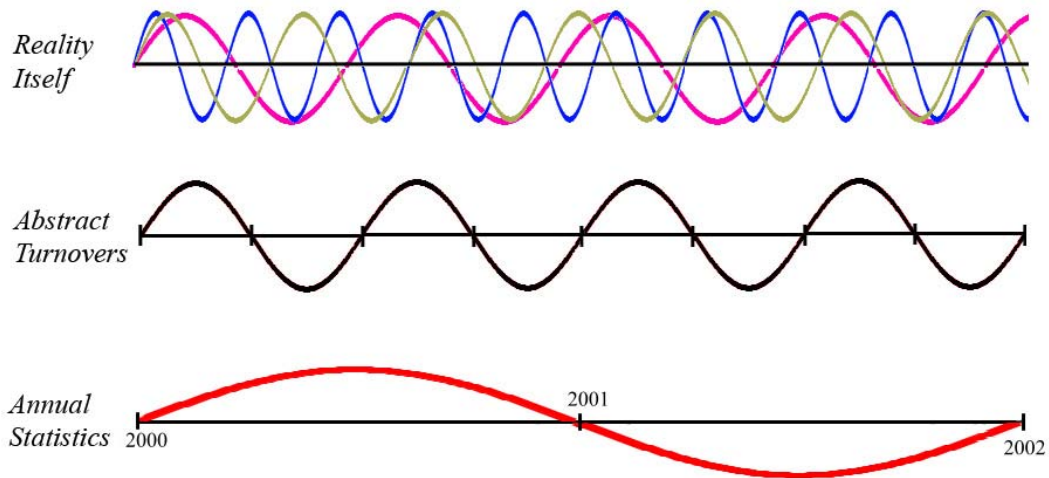
GRAPH: Turnovers of Capital



This is our most abstract conception of turnover of capital. However at the empirical level, we could not find circles in sequences. In reality, it does not occur within an order. Turnover times differ in the different sphere of investment. Some cycles are expanding; some are contracting, although here we assume that the process is renewed on the same scale. Moreover, they intersect to each other. That means capitalists do not need to wait the completion of turnover to start a new one. Credit relation makes the continuity of production possible. Without waiting the realization of surplus capital, the capitalist can continue to produce every day by investing more capital in the production. Therefore circuits of capital are intermingled in reality. Everyday, every minute, every second a new sine wave can start. In the same instance, capitalist tries to control three different circuits of capital. Some must be sold, some must be produced, and some must be started. In other words, in the same instance, there are completed products remaining to be sold, there are production processes to be completed, there are money remaining to be invested.

This huge complexity of empirical reality looks like interweaved patterns of sine waves depicted in the first line in the graph below.

GRAPH: Turnovers at the Three Level



No one can calculate value of money in this intricate complexity. Without any abstraction, it should be calculated for every single second, because as seen in the graph at every single second some capital completes its turnover so money and value get a new quantitative aspect in every single second. Thus, such a calculation attempt would be an impossible task just like drawing a map in the same scale of earth (with the 1:1 scale).

The only scientific way to elaborate the reality is to make the complexity as simple as possible. We abstract from all these complex reality of capital circuits via the concept of turnovers which considers capital at the gross level. This turns many capitals into a single abstract capital which is in line with our first definition explained above: sequential capital turnovers.² This is shown in the first graph and the second line in the second graph above.

The third level of abstraction is an abstraction used when preparing statistical data by states or preparing balance of accounts by capitalists themselves. It is certainly a redesign of reality via calendar year by grouping the quantities. For researchers the only medium to make empirical study is obviously these statistics. The work hours, wages, capital input and the gross output are calculated and published yearly. However, as we see above

² By the way, we can easily demonstrate the simultaneous interpretations' construction of capital turnovers as the cycles in the graph below: Inputs and outputs are valued simultaneously so the turnover looks like closed cycles. For a turnover, beginning and the end are the same point. However it should be like that: the end of previous turnover and the beginning of following turnover must be the same point.

there is incompetence between the theoretical construction and statistical construction of reality.

If we use annual statistics instead of theoretical turnover statistics, we will encounter some problems because of this incompetence. Some required calculations within a year would be ignored and omitted. Although value of money (and consequently all the value categorized) has changed in a year at least n times (number of turnover of capital), the researcher calculated it only at the beginning and at the end of year. It is theoretically required that the MELT must be calculated at the end of each circuit, that is after the realization of capital.

Application of TSS to the annual data can lead to some negative surplus values which is theoretically impossible. Because although rate of exploitation can take negative values for sum sector in some cases, surplus value at the gross level can not be negative, as if all values are created by capital, which is theoretically non-sense. This is due to the omission of some required calculations.

Here I will quote an example³ showing the difference between the applications made to circular data and yearly data separately.

³ The data comes from Manufacturing Sector Survey. Manufacturing sector is considered as a whole economy here and MELT calculated for this data.

TABLE: An Example for Calculation of Melt

The last column of the above table shows the rate of surplus value after rearranging of the statistics according to turnover of capital (the method will be supplied in the following paragraphs). This result and the pattern of rate of surplus value are perfectly compatible with our expectations about Turkish political economy.

4.3/ Redesigning the National Accounting Data

GDP is published yearly. In my calculations of MELT, I also need an annual estimation of cost of means of production. It is estimated by the same method used in Shaikh and Tonak (1994). So I get yearly IO tables. This data then becomes the base for my circular statistics calculations.

In order to obtain Marxist data, i.e. turnover data for the calculations of all value categories firstly we have to estimate how many times our abstract capital is turned over in a year. I try to estimate number of turnovers for Turkish economy through applying simple accounting definitions, similar to proposed in Haass 1992. Sectoral balance sheets obtained from the Statistics of Central Bank of Turkey give us an opportunity to calculate stock turnover time (which is cost of selling over average stock) which is used as an approximation to capital turnover.

On the average, for the whole period, I find out that capital has turnovered approximately 9 times.⁴ And than by a kind of interpolation, I construct circular data for each variable. I will explain the procedure in the following paragraphs.

Circular statistics are expected from the yearly data by the following methodology: We know that total of circular values must sum up the year values. And we try to solve unknown median circuits. The other circuits are found by the linear interpolations between these median circuits. Let the capital turns n times in a year. We have n unknowns of median values and n given equations (total of circuits equals yearly amount). When we solve the system, we repeat the same procedure for every single variable.

4.4 / Considering Productive and Unproductive Labour

Considering the productive and unproductive labour categories requires the modification of TSSI definitions of value categories (I take the Shaikh-Tonak 1994, Shaikh-Savran 1999 discussion as granted). In the definition of MELT, the nominator stays the same; however the denominator must be changed to cover only the productive field, because the unproductive area does not create value. Similarly, the definition of variable capital must be changed as such to include only productive labour. Therefore, surplus value turns to be difference between the productively worked hours and the variable capital. The equations below depict these definitions respectively.

$$\sigma_t = \frac{C_t^{TL} + V_t^{TL} + S_t^{TL}}{L_{(P)}^{Hour} + \frac{C_{t(P)}^{TL}}{\sigma_{t-1}}} \quad (1')$$

$$V_t^{Hour} = \frac{V_{t(P)}^{TL}}{\sigma_t} \quad (2')$$

$$S_t^{Hour} = L_{t(P)}^{Hour} - V_t^{Hour} \quad (3')$$

⁴ I use the same number for every year but one can develop the study by calculating yearly turnover number.

Productive and unproductive labour data are estimated from the micro sets of Turkish Household Labour Force Survey of Turkish Statistical Institute which is annually produced and contains enough individual to represent the Turkey's population. For every row of individual I look at the four questions (columns) in order to specify whether s/he is productive or not:

- 1) Whether (s)he is employed or not?
- 2) What is employment status (regular employee, casual employee, employer, own account worker, unpaid family worker)?
- 3) What is the economic activity? (for a period ISIC Rev.3 and after that NACE Rev.1)
- 4) What is the occupation (ISCO 68 and then ISCO 88)?

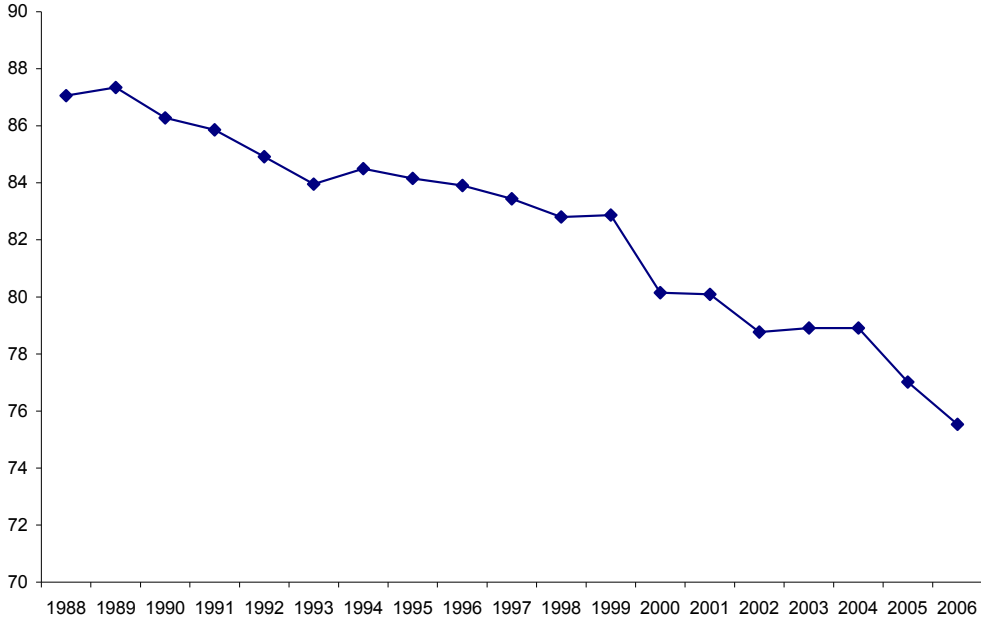
By crosschecking the answer and applying the classification of ST and SS, we reach the productively and unproductively working population.

The percentage ratio of productive labour to the total labour is illustrated in the below graph. Estimation shows that 2000 is a dramatic change year (compatible with the 2000-2001 financial crisis, and neo-liberal deepening). Another important finding is that the ratio has been tendentially declining for the whole period.

Graph: Percentage Ratio of Productive Labour to the Total Labour

Here if we extend the productive labour to include the own account worker (self employed) with granting the economic activity and occupation criteria, the results, without a dramatic change, become like below.

Graph: Percentage Ratio of Extended Productive Labour to the Total Labour



The same survey also provides the working hour information for every individual. So I can get the productively worked hours to use the value calculations and I estimate the wages payment made to productively work through applying Household Income and Expenditure Survey micro data sets.

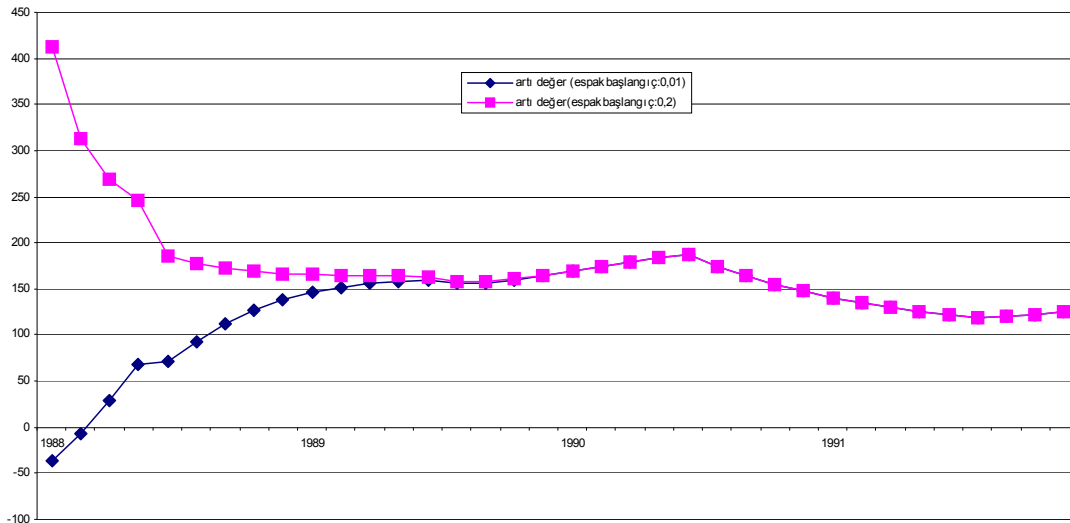
4.5/Results

I estimate rate of surplus value and profit rate at the sectoral levels which have great explanatory power for structural changes in Turkish economy. I will quote only the main results here:

4.5.1/ Whatever the Initial Value, MELTs Converge

In the below graph line in magenta color shows the rate of surplus value calculated with the initial value of $MELT_0 = 0,2$ and the blue one with the $MELT_0 = 0,01$. They converge almost within a year.

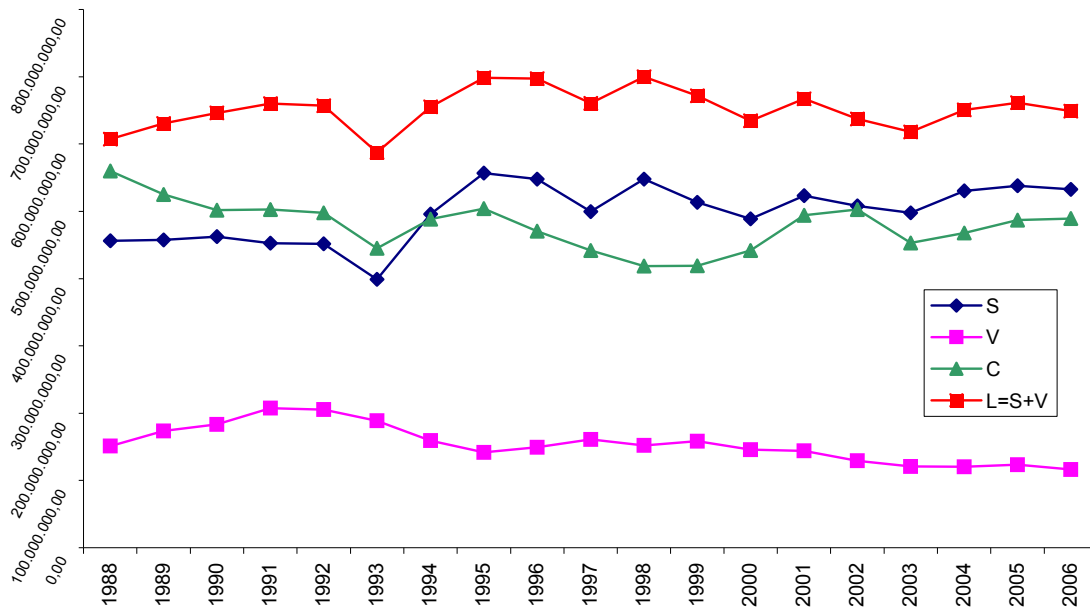
GRAPH: Rate of Surplus Values Calculated with Different MELTs Converges to Each Other Almost Within a Year



4.5.2/ Constant Capital, Variable Capital, Surplus Value and Worked Hours

This and following graphs need elaboration of Turkish economy. I leave this type of analysis aside in this preliminary draft.

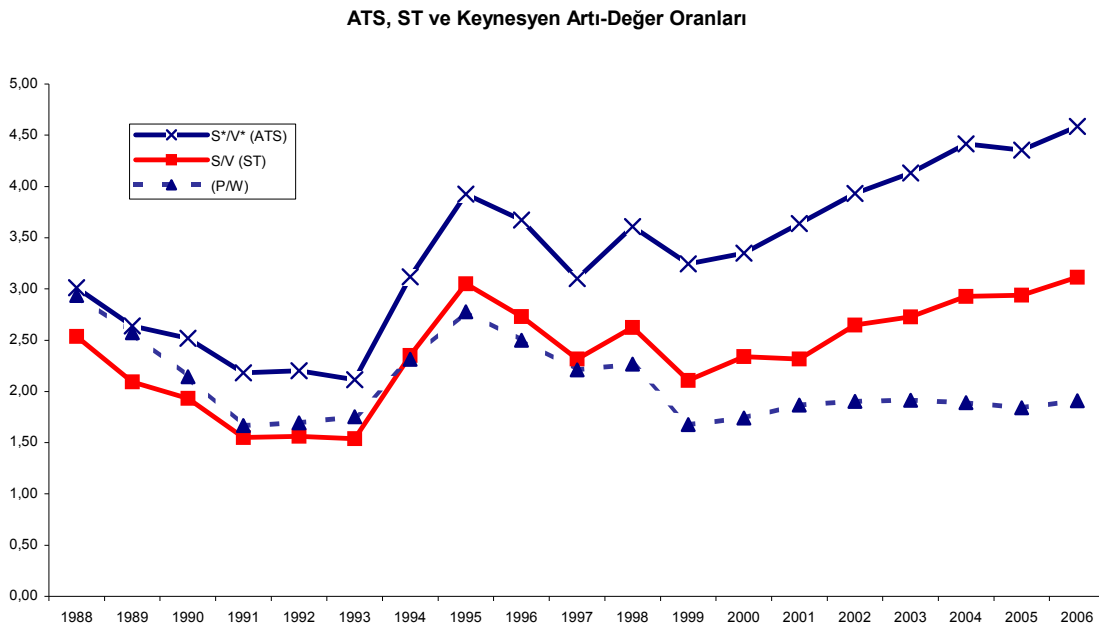
GRAPH: Variable Capital, Constant Capital, Surplus Value and Worked Hours in Million Hours



4.5.3/ Rate of Surplus Value According to TSSI, Shaikh and Tonak's Method and Keynesian Calculations

Although they are not exactly the same, the patterns are resembles to each other, because total prices equal to total values at the gross level. Below graph shows these results.

GRAPH: Rate of Surplus Value According to TSSI, Shaikh and Tonak's Method and Keynesian Calculations

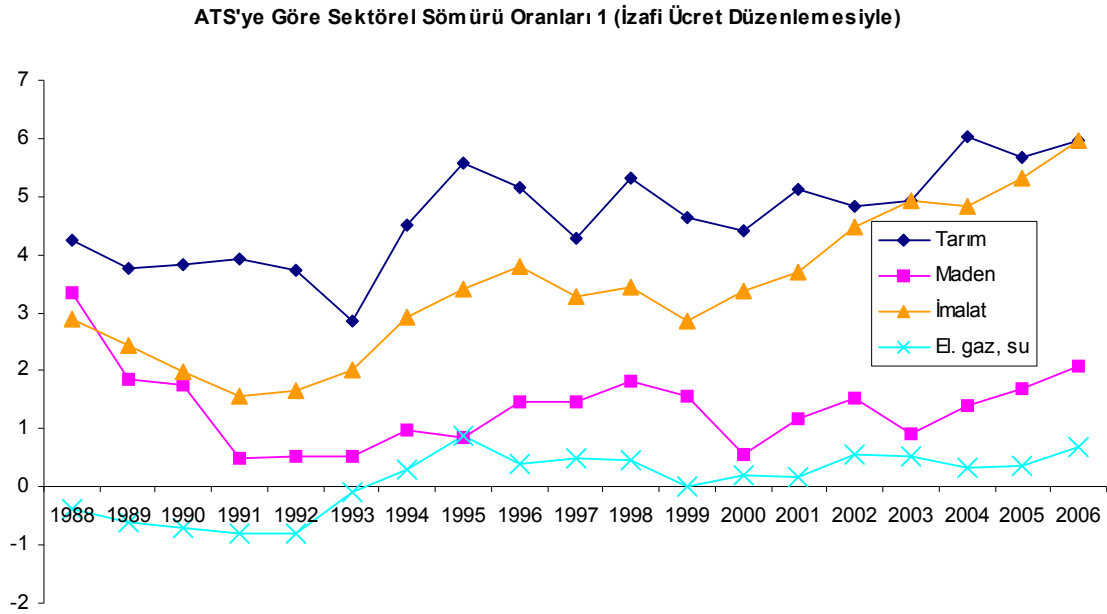


4.5.4/ Negative Rate of Exploitation

Rate of surplus value must be positive all the time, however in some sectors or for some positions the rate of exploitation can take negative values according to the wage amount.

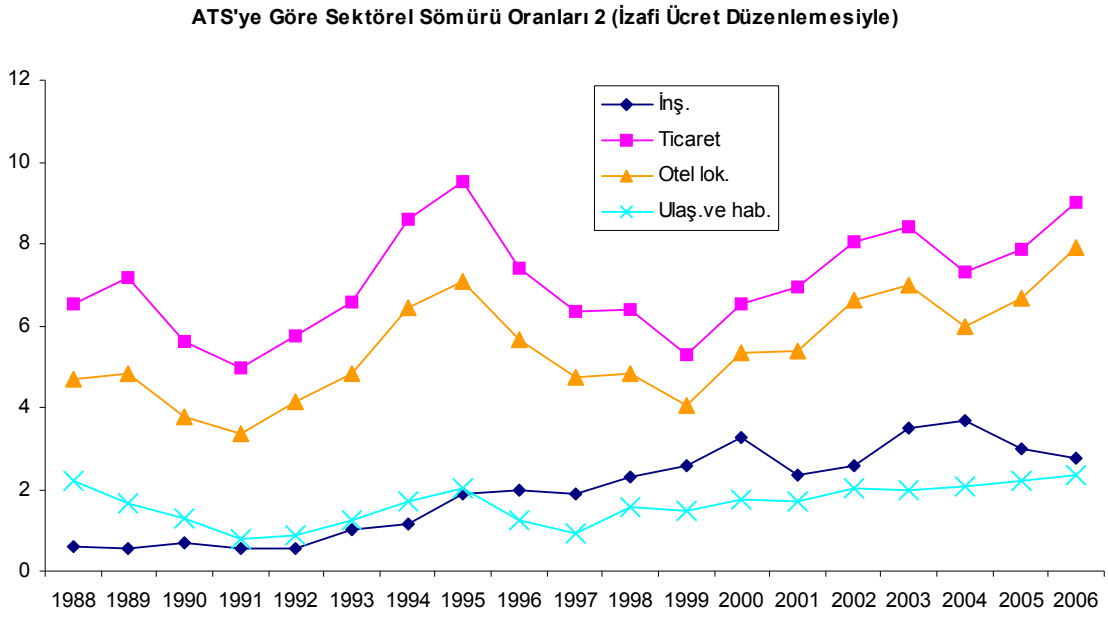
I get such result for the “electric, gas and water” sector, in which the wages are higher. In the graph below, rate of surplus value for the “agriculture, forestry and fishing” (dark blue line), “mining” (magenta), “manufacturing” (orange), “electric, gas and water” (light blue) sectors are shown.

GRAPH: Rate of Surlus Value for “Agriculture”, “Mining”, “Manuafcturing”, “Energy” Sectors



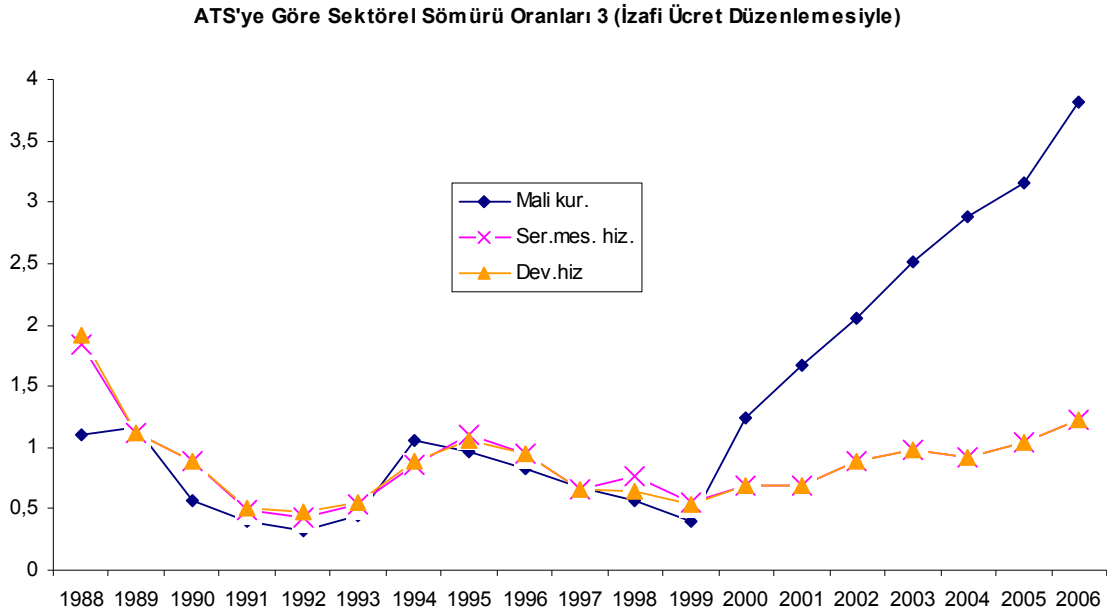
In the graph below “construction” (dark blue), “wholesale and retail trade” (magenta), “hotels and other lodging places” (orange), “transportation and public utilities” (light blue) are depicted.

GRAPH: Rate of Surplus Value for “Construction”, “Trade”, “Hotels and...”, “Transportation and...”, Sectors



In the graph below “finance, insurance real estate” (dark blue), “business, legal, miscelenous professional services” (magenta), “general government” (orange) are depicted.

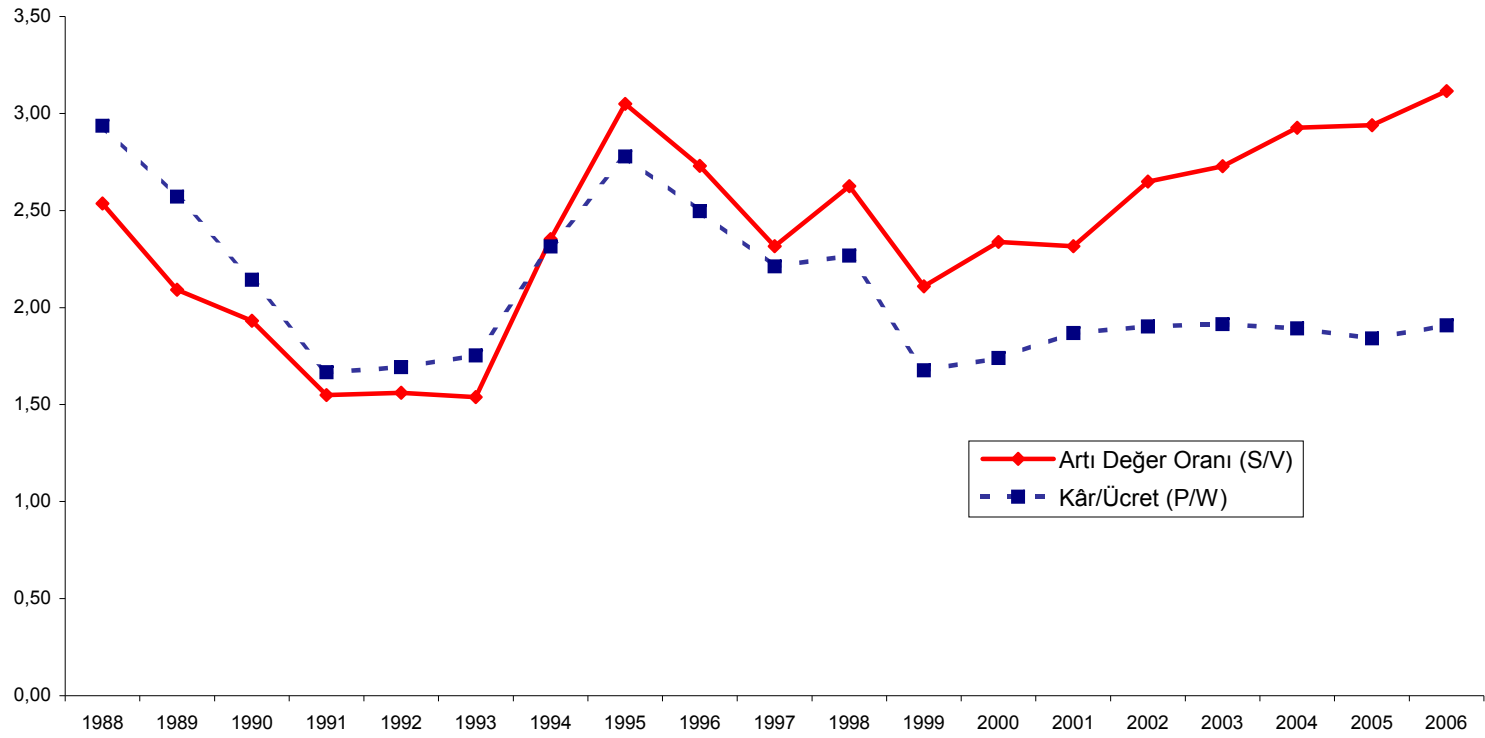
GRAPH: Rate of Surlus Value for Finance, Services and General Government Sectors



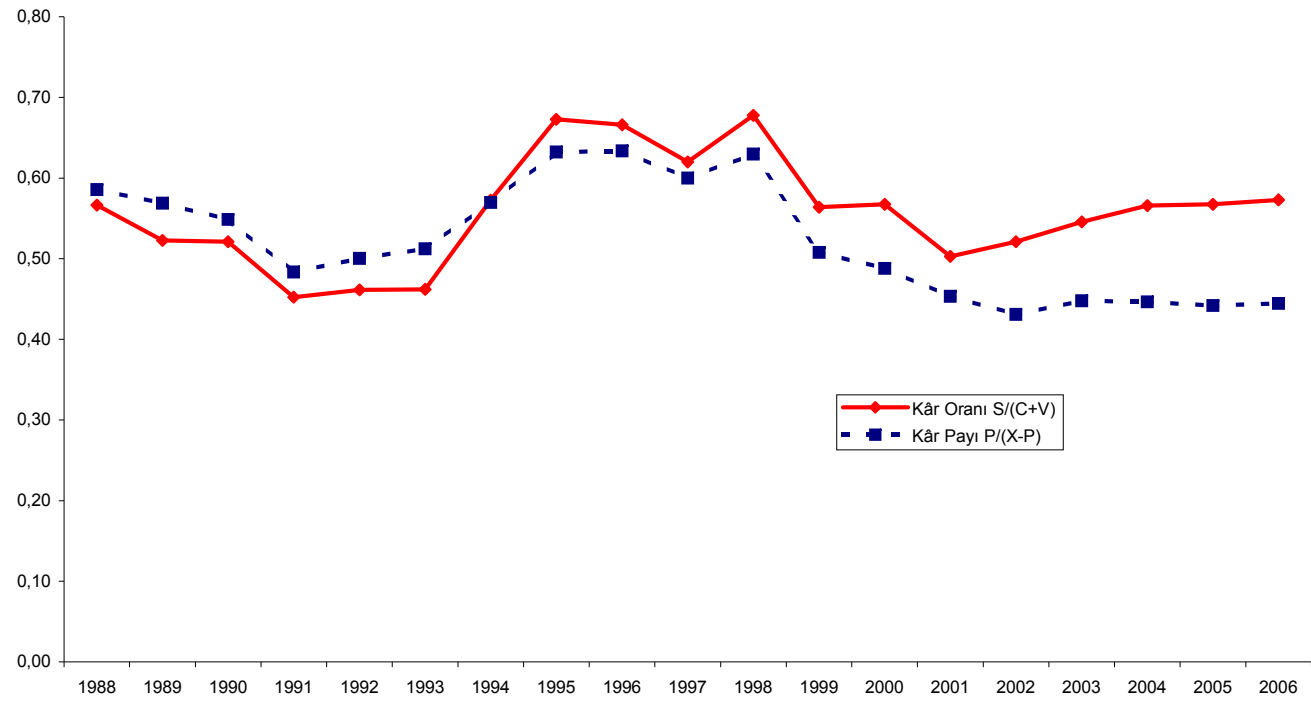
4.5.5/ Results Obtained Through ST Method

The dissertation also makes some estimation through Shaikh and Tonak's method which rearranges. Yearly IO estimations according to productive and unproductive category. The obtained profit rate and rate of surplus value are illustrated in the following graphs in comparison with the Keynesian calculations (wich is taken directly from the national accounts such that aggregate wage profit ratio in substitution to rate of surplus value and profit over wage and capital in substitution to rate of profit). The red lines depict the Marxist categories and the blue one Keynesian.

GRAPH: Rate of Surplus Value by the Shaikh and Tonak's Method and Keynesian Wage-Profit Ratio



GRAPH: Rate of Profit by Shaikh and Tonak's Method and Keynesian Profit Ratio



CONCLUSION

This paper shows that only by means of rearrangements of annual data, Marxist value theory can be applied. The paper also reaches very valuable results for the Turkish capitalist system.

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