

**MODIFYING THE TURNOVER FORMULA IN ORDER
TO USE IT IN THE SPHERE OF DISTRIBUTION.**

(This is a second posting. I have corrected the denominator in the formula. The result is correct but the denominator which was \$1295.1 billion was now \$878.1 billion equal to GV and not GO.)

The formula for the annual turnover of capital works for production and for the economy as a whole. However when we seek to apply it to wholesale or retail it offers a result below that which is to be expected. The reason is not hard to find. Gross Output is the total sales within an industry and one which excludes sales between industries.

This is of little consequence within the sphere of production where most purchases and sales are horizontal; that is they occur within the industry itself. In the case of manufacturing, by far the biggest of the spheres of production, gross output and sales coincide. For example for the years 1992 to 2014 the deviation between gross output and sales in manufacturing was 1% on average or statistically insignificant. Certainly too small to influence the turnovers of capital within each year.

The key point to make here, one which indirectly confirms Marx's original analysis, is that within the sphere where value is actually produced, sales reflect the value newly added by production. Hence the coincidence between sales and Gross Output. Matters stand completely differently in the sphere of circulation as opposed to production. Here most of the value that is circulating, and we refer specifically to wholesale and retail, is not produced within this sphere, but in production where the commodities that are to be sold have been produced. Much of the supposed value added by retail, is in fact value transferred to it by production.

Accordingly within retail, sales and gross output differ significantly. This is to be expected. If the value circulating within retail has been produced outside of it, gross output no longer suffices, as it reflects only sales within retail itself. The purchases by retailers exceeds that of the sales within retail. Here we refer to purchases from wholesalers, importers and manufacturers. In retail therefore purchases and sales tend to be vertical. As a result we no longer have any connection between gross output and retail sales. Retail sales within and without the sphere of retail must exceed gross output within retail, as gross output corresponds only to the value realised within retail. (Note 1) In sum, the totality of final retail sales aggregates the value realised in retail plus the value produced outside it, which is why it is permissible to substitute it in the formula.

The table below covers 9 years of retail sales. The first line lists annual retail sales. The second line lists annual gross output for retail. We immediately see how much larger annual retail sales are. (Figures drawn from the BEA interactive tables and FRED retail inventory to sales ratios and retail inventories.)

<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
3889.3	3988.8	3914.8	3604.3	3824.0	4114.7	4284.0	4462.6	4627.5
1295.1	1320.7	1280.7	1222.5	1327.5	1367.6	1449.2	1512.4	1550.3

It follows that if we were to use our original formula:

$$\frac{GO + (GO-GV)}{GV}$$

we would arrive at just over 2 turnovers p.a. which is of course absurd. However if we now modify the formula, substituting retail sales (RS) for gross output (GO), we obtain the correct answer for 2006. Hence:

$$\frac{RS}{GV} + \frac{(RS-GV)}{GV} = \frac{3889.3}{878.1} + \frac{(3899.3 - 878.1)}{878.1} = 7.9$$

Below we detail the turnover periods for the years up to 2014

<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
7.9	8.1	8.1	7.6	7.8	8.2	8.2	8.2	8.3

Our answer of around 8 turnovers a year can be confirmed when we set it against inventory turnover. Uniquely retail is the one 'industry' where most if not all sales are for cash or card. Credit is hardly given. Payment is immediate. Hence working capital does not have to include cash to cover the period between sales and payment. It is therefore diminished in relation to other sectors where credit has to be given. On the other hand, retailers often get credit from their suppliers be they wholesalers, importers or manufacturers. Retailers generally have to pay only 30 days (or even 60 days for the larger chains) after delivery. Hence unlike the other side of the circuit, credit is extended to them and this offsets the period they hold stock before it is sold and turned back into cash. Taking all this into account, we could expect to find that in the retail sector, inventory and working capital turnover periods more or less coincide. And they do. For the period 1997-2014 the average variation was 3% between the two, with working capital turnover being slightly shorter than inventory turnover because of the credit given to retailers by their suppliers.

Marx pointed out that production pays for circulation (wholesale and retail primarily). Hence there is always pressure to minimise the circulation time and thereby the size of the commercial capital needed to finance it. In this paper we have seen how much more rapid is the turnover time in retail compared to manufacturing, where retail turns over two thirds faster than does manufacturing. It thus requires proportionately less capital for its function.

Next we turn to the economy as a whole. It is really in the aggregate that the original formula is most accurate. Taken as a whole, any anomalies are averaged out. When considering the whole economy, sales cannot be substituted in the formula. The observant reader will notice that the value of final sales is more or less equal to Net Domestic Product. In other words, the value of total final sales equals the value added throughout the economy. If we were to use it we would have an equation with two equals and this would yield a result of 1. Instead we have to use gross output which registers the price of all sales made and not only the price of final sales.

In the table below we plot total sales as registered by the BEA against Gross Output. The first line is total sales and the second line is gross output.

<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
12865.3	13560.6	13863.5	11821.3	13004.8	14404.6	15191.7	15606.0	16115.6
22094.3	23204.6	23689.8	21425.9	22754	24164.1	25264	26187.1	27532.9

As a result, when we compare gross output to value in our formula we arrive at 2.7 turnovers of capital per annum, rather than the 1 which total sales would yield.

This paper advances our understanding of the formula or more precisely the connection between gross output) on the one hand and value added on the other. Where value is produced gross output is used, never sales. The value added in these spheres of production have an intimate relationship to

gross output. Value added here is distilled from gross output. In the sphere of distribution this intimate relationship does not hold, as the sphere of circulation does not produce the value it buys and sells. Here total sales suffice as they incorporate the gross output for that sphere plus the input of value from production itself. Finally, over the whole economy, once again, gross output must be used as the value of total final sales has to equate to value added.

In parting, a significant point has been made in a number of recent conferences/discussions that in Marx's unpublished papers, now being collated in what has become known as the MEGA project (Marx-Engels-Gesamtausgabe works), he devotes much of his efforts to the turnover of capital. Marx emphasises that it is impossible to understand the rate of profit without the turnover of capital. The annual rate of profit is after all, based on a rate produced by multiple turnovers of capital. Put simply, if we calculated the rate of profit over two years rather than one, the rate would be much higher because there are twice as many turnovers in two years than one. And as each successive turnover adds a new and additional profit, the mass of profits over two years exceeds that of one year, while the capital over which these profits are calculated is reproduced rather than increased.

In this context are we allowed to say that our pre-occupation with turnover times on this website is most 'timely'?

Brian Green November 2015.

(Note 1.) This observation is best made outside the general discussion above. When describing the value circulating in distribution (retail and wholesale) we use the word "most" and never "all". Some value is produced in wholesale and retail. Here we recognise the labour necessary to move, warehouse, keep clean, and shelve the commodities due for sale without which the commodities would deteriorate or not find their way to the point of consumption. We of course leave it to a future society to decide what necessary labour in retail is and what superfluous labour is. We do not want a repeat of the USSR and its ugly premises masquerading as shops. But equally we do not want the over-elaborate and wasteful packaging found today, the promotions, the marketing and the advertising that pressure consumers to buy and choose. We are sure this will be replaced by colourful, friendly, communal and gentle places of consumption in our new world.