# FOREIGN DIRECT INVESTMENTS THE INTERNATIONAL DIRECTLY INVESTED CAPITAL DIVIDED INTO COOPERATION CAPITAL AND LONG-WAY FLOWS

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**Abstract**

*Face to a significant list of theories on the foreign direct investments origins we previously worked on a simple world level FDI=DIA (direct investments abroad) equality on both short and (especially) long terms supporting several approaches: first, the "world top-16", then the "static-dynamic" difference for world FDI&DIA, an extended analysis on the world area divided in a number of 20 multi-country regions, the Eurasian territory case (taken apart) and specific international capital sections, as a specific structure of this world capital market.*

*This below paper will be for one more issue : international capital sharing into cooperation capital and long-way flows. These two are new concepts on international directly invested capital, in the larger context of such concepts already introduced in our previous papers on this topic. In a methodological view , cooperation capital and long-way flows, will result as composing the total/global amount of international directly invested capital. In this respect there will be below an analysis if exist or not, more than cooperation capital and long-way flows in the total amount of international directly invested capital.*

**Key concepts:** *international capital, foreign direct investments (FDI) , direct investments abroad (DIA), flows, stocks, stocks balance*

**JEL Classification:** *F21*

It is by definition that *foreign direct investments (FDI)-* and their pair, *direct investments abroad ( DIA)* - mean a capital formed in country X and then invested in another country, Y.

a (Y) = a (X)     (1)

In which 'a' is the amount invested, X is the investor (home) country and Y is the investments recipient (host) country.

## 1. Basics and model assumptions

- These amounts of capital are never invested in the same country, but compulsorily in another one;
- And they might be what is popularly called international investment (foreign direct investment) transactions -- but also basically what is called an investments *flow:* FDI inflow and /or DIA outflow – the two latest, as seen by the countries involved in such transactions – see the volume of such transactions done during up to one year time;
- A single transaction, a one-year flow and all that comes to be more than these, as amounts traded – which here are supposed to start from amounts like 'a' and 'b' -- will be in two postures, i.e. on both sides of the equality sign. And this gets enough important for the modelling practice.
- Hence, each transaction recalls and respects the basic accounting rule -- e.g. between debit (left hand side of the equality) and credit (the right hand sign of the equality).

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● All model equalities let the same inflow on the left and outflows on the right hand sides.

● Despite the two appearances of the 'a' basic amount , this is just one flow to talk about that moves between at least two countries.

● Each individual transaction and all transactions cumulated leave the basic amount equality between investments made by investor countries (DIA) and those received (FDI) by the recipient countries.

● And reciprocally, each investment amount or part of amount found throughout data exposed by "World Investment Report"- WIR 2016 is supposed to be investment both made by a country and received by another country;

● There might also be one investor country for several recipient countries, and conversely -- as much as (at the world level, once more) the FDI=DIA equality sees itself valid since each individual transaction, as already seen above, passes through world flows of each year and get to FDI/DIA stocks as such (flows cumulated of all multi-year period). Recall that 'WIR 2016' offers FDI&DIA flow data on all years of the 1990-2015 interval.

● International investments start between neighbouring countries – i.e. member countries of a region. These primary and intra-region investments are likely lower amounts (invested) on the short term.

## 2. Model description

### 2.1 The two variants

It is from the above point (1) that two working variants can be here considered and developed and the difference between starts with the second transaction and with the third country, Z, here involved.

**Variant 1:** The third country Z invests in country X the 'b' amount:

$b(X) = b(Z)$ (V1/2)

And this means several things from this on, e.g. our primary accounting table.

**Table . 1 : V1/ Primary Accounting table**

| Chapter \ Country | X | Y | Z | Total |
|---|---|---|---|---|
| Entries (FDI) | b | a | - | a+b |
| Issues (DIA) | a | - | b | a+b |
| FDI flows balance* | b-a | a | -b | 0 |
| Turnover(Tv)** | a+b | a | b | $(a+b) = \frac{1}{2} (Tv_X+Tv_Y+Tv_Z)$ |

\* There might equally be a>b and a<b.

\*\* Turnover (Tv) is entries and issues cumulated in module numbers on each of columns.

Of which on the *short term* results come up in two different terms:

● the one of *FDI flow balances* – inflows minus outflows / FDI flows minus DIA flows of the same period for each country involved in such transactions – of which sum makes zero;

● the one of *turnover* – also defined as above. Then, in our case the turnover accounting compulsorily starts from the same position of the total (overall) zero FDI stock balances. So, when recording the two (a and b) transactions turnover certainly is a+b – i.e. while FDI balances of flows, by country and total, are like in the above primary Accounting table.

**Variant 2** Opposite to the previous Variant 1, it is country X investing "b"amount in country Z for the same zero overall FDI stocks balance and turnover as above and :

$b(Z) = b(X)$ (V2/2)

**Tabel no. 2 : V2/ Primary Accounting table**

| Chapter \ Country | X | Y | Z | Total |
|---|---|---|---|---|
| Entries (FDI) | - | a | b | a+b |
| Issues (DIA) | a+b | - | - | a+b |
| FDI flows balance* | -(a+b) | a | b | 0 |
| Turnover(Tv)** | a+b | a | b | $(a+b) = \frac{1}{2} (Tv_X + Tv_Y + Tv_Z)$ |

\* There might equally be a>b and a<b.

\*\* Turnover (Tv) is entries and issues cumulated in module numbers.

Or, the difference between the two variants (stories) is just the one of two simple aspects. First, for V2 just one investor country in the area – that is country X, and no more country Z, as in Variant 1. Second, and as by consequent, while in Variant 1 only country Z was the one with negative FDI flows balance, as for sure, and for country X the b-a total amount might be both negative or positive, Variant 2 replies by the result in which only country X records a negative FDI flows balance.

### 2.2 The turnover

Actually, the concept of turnover – i.e. of FDI&DIA – is just the amount of transactions done, as above:

Tv = a + b

And this then noticing that turnover (Tv) here originates in the international area – there will be equally individual countries' turnovers and these concomitantly record the same amounts traded on their own.

**Theorem 1:** *The level of international capital transactions – i.e. international or absolute turnover -- is to be searched at the half of the individual nations' turnovers sum.*

Basically, as well, each nation's FDI&DIA turnover cumulates – i.e. as in the above primary Accounting table – entries (FDI/ inflows) with issues (DIA/outflows) in module numbers, so offering them the common algebraic sign and dimension – correspondingly -- at the world level turnover is the same with FDI and with DIA, as each one apart.

As the accounting table procedure, the total – i.e. international -- Tv will be basic for the ones of individual countries. It is from this on that turnover will relate to *cooperation capital* and *long-way flows* computations – i.e. these two being the aimed concepts of this paper – but for now let us treat each of them as different issues.

### 2.3 Cooperation capital and long-way flows

Back to the above Accounting table, once again, to start from, the following accounting tables will record turnover and other two significant sizes – i.e. cooperation capital and long-way flows. Unlike the turnover, *cooperation capital* and *long-way flows* are the two parts of international investment as seen from a point of view different from the ones considered in our previous papers. These two components of international investment work and move differently from one-another – i.e. here including accounting procedures in this paper.

*Cooperation capital* originates in apparently the dominant feature of the international directly invested capital, a double one: (i) deep flow inequality by individual world countries and (ii) high FDI flows belong to countries of high DIA flows as well and conversely – i.e. the apparent flows distribution irregularity linked to the 'regularity' of FDI and DIA flows associated amounts by individual countries. In such circumstances, cooperation capital is supposed to be born on the long term by reciprocal flows between the same countries. It works first between neighbouring countries – i.e. at regional level --, but later on between countries at all distances – e.g. the same rule for what happens between countries of high

amounts of capital to run in the international area. In all circumstances, each cooperation capital basically means two – i.e. a pair of -- opposite flows in the long run.

The 'higher floor' cooperation capital will be assumed to be born only after that the previous (regional) cooperation capital has filled the FDI demand of the region. In other words, cooperation capital will maximize on the region side/level and just surplus of it will be admitted in the inter-regional area.

Cooperation capital proves complex behaviour: it just starts (as above explained twice) in the region area. Besides this primary level of it, cooperation capital also meets flows as long as the other category one – i.e. there might be countries in different world regions so 'playing' with capital between enough similarly as FDI-DIA working within regions.

*Long-way flows* are some different issue – they seem to rather not have too much to do either with the individual country's neighbourhood, or with lower amounts invested at the beginning, or with any future come-back of capital to the home country. These flows are assumed to be invested by significant investor countries (only) – capital-laden countries -- in other countries and regions – i.e. in our view, unlike cooperation capital, these flows account just once between their two subject-entities.

*2.4 On the long term*, new specific developments are assumed to occur:

**Cooperation capital born within a region.**

For **Variant 1:**

$$a' (X) = a' (Y) \qquad\qquad\qquad\qquad (V1/1')$$
$$b'(Z) = b'(X) \qquad\qquad\qquad\qquad (V1/2')$$

In which it is likely that $a' \leq a$ and $b' \leq b$ and $a$ and $b$ are, of course, the previous amounts invested, now in way of coming back to their host countries(within time). Zero overall FDI stocks – now, instead of flows – balance actually remade, as the basic rule, but there is something more to mention about here: i.e. a natural trend towards FDI=DIA equality for each country apart, as a long term trend specific to cooperation capital, by its definition. The country's cooperation capital so identifies with the lower amount of: $a'+b < a+b'$ – the one for which the country accounts the same amount for FDI and DIA. Country Z keeps the other negative balance as such in the area, and so it accounts for cooperation capital its FDI stocks. Country Y, the (lonely) one with positive FDI stocks balance, is (equally) the lonely one recording its DIA as cooperation capital.

Then, let us also remark – i.e. since turnover (Tv) and cooperation capital(Ccp) resulting from independent computations – the difference resulting as follows:

$$Tv – Ccp = a-a' \qquad\qquad\qquad\qquad (V1)$$

This difference could actually identify within the international capital a part that might be as ambiguous in concept – i.e. neither cooperation capital, nor long-way flows (these last not yet present in our model so far) – as a residual amount. All that can be asserted so far might be that cooperation capital could be achieved only when $a=a'$ (already).

**Remark:** Reversing the above $a'+b < a+b'$ assumption will just replace the last equality by: $Tv-Ccp = b-b'$.

For **Variant 2:**

$$a' (X) = a' (Y) \qquad\qquad\qquad\qquad (V2/1')$$
$$b'(X) = b'(Z) \qquad\qquad\qquad\qquad (V2/2')$$

with the same above assumptions for **$a \geq a'$ and $b \geq b'$.** Correspondingly, the difference between turnover and cooperation capital, in its turn, will be:

$$Tv – Ccp = (a-a')+(b-b') \qquad\qquad\qquad\qquad (V2)$$

Then, previously to the next step of considering long-way flows, just summarizing facts for the long term international capital. First, it preserves/reiterates basic facts of the short term one: (i) the sum of individual countries' FDI stock balances stays zero and (ii) total turnover

stays the half of the sum of the individual countries' turnovers. Cooperation capital seems given birth, but not yet achieved, given the above Tv-Ccp differences for the two variants.

To be also added that in the larger view, despite here regarding (i.e. accounting) individual country turnovers, the number of countries might also enlarge without affecting neither this unshaken truth, nor even total amounts recorded whether the added countries prove inactive on international capital invested (with no amount here accounted).

### 2.5 Between regions

Long-way flows made reaches the supplementary double assumption in which the first three countries (X, Y, Z) belong to R1 (multi-country) region, to which another R2 region will be added in the international area, here containing just one country W for the moment. Then, country X of R1 invests in country W of R2 in both variants.

$$c\ (W/R2) = c\ (X/R1) \qquad\qquad\qquad (3/V1\&2)$$

And the above difference, here resulting as:

$$Tv - (Ccp + Lwf) = a\text{-}a' \qquad\qquad\qquad (V1)$$

Then, let us notice – for Variant 1 -- how both country X and region R1 record negative FDI stock balances, while country W and its region R2 record opposite positive FDI stock balances, both country and region FDI stock balances keep in common the c amount (also in module number). New results are, fist, the overall zero FDI stocks balance and total turnover according to Theorem 1 above.

**Theorem 2:** *The same as the international capital turnover, long-way flows account by their half amount for the multi-country region.*

For Variant 2 the (3) equality makes the above difference as follows:

$$Tv\text{-}(Ccp + Lwf) = (a\text{-}a') + (b\text{-}b') \qquad\qquad (V2)$$

**Remark:** Introducing the long-way flows does not change the turnover's surplus amount over cooperation capital – plus, this time, the long-way flows – the rule being that this is what makes cooperation capital yet 'imperfect'.

### 2.6 This resulted/residual difference

Deducting as above cooperation capital and long-way flows from international turnover is, of course, assumed to identify what might be included in the international investment total amount besides these two – i.e. what is neither cooperation capital, nor long-way flows. Whether this difference proves substantial it would be for internationally directed invested capital being some more than cooperation capital and long-way flows, as here above presented. – the contrary, i.e. just these two making the whole international investment when no significant difference, as such.

Or what we have here is the key finding of the new FDI-DIA dimension that we look for – let us call it *residual difference* for the moment.

### 2.7 Developments in recipient regions – equally on long term – here refer to the following:

Turning the previous long way flows (c) into regional (level) cooperation capital (d+e) in the FDI recipient region. And this, of course, in the long run, too. Actually, the direct long-way flows recipient country W then invests in some other member countries of *region R2*:

$$R2: d(U) + e(V) = (d+e)(W) \qquad\qquad\qquad (4)$$

but here restricted to d+e≤c and again for the two *Variants* here developed. These developments will preserve the above residual differences for the two Variants as:

$$Tv - (Ccp + Lwf) = a\text{-}a' \qquad\qquad\qquad (V1)$$
$$Tv - (Ccp + Lwf) = (a\text{-}a') + (b\text{-}b') \qquad\qquad (V2)$$

**Remark:** This step – i.e. in region R2, as FDI recipient – is the same as the above case in region R1 that then was going to become an investing abroad region. The difference on the ground is that in recipient regions (the Third World) especially these d'+e' back-flows stay rather negligible – i.e. that economic force of reinvesting back in comparable while is rather missing in underdeveloped regions.

*2.8 More DIA of country W for cooperation capital*: country W invests back over-borders the c' amount in country X, as the 'higher floor' cooperation capital:

$$c'(X/R1) = c'(W/R2) \qquad (5)$$

*See for Variant 1 the residual difference as:*

$$Tv - (Ccp+Lwf) = (a-a')-c' \qquad (V1)$$

meaning, for the first time in such a scenario, that inter-regional cooperation capital plays a little differently than the intra-region one: i.e. it lowers the residual difference between international investments' turnover and cooperation capital plus long-way flows. And for *Variant 2 the residual difference this time is:*

$$Tv - (Ccp+Lwf) = (a-a')+(b-b') -c' \qquad (V2)$$

Finally, the same circumstance for both variants on this step – i.e. the inter-regional cooperation capital as lowering the residual amount.

***Remarks:*** *As* cooperation capital, this new country W's business is here assumed to follow traditional (already known) partners -- i.e. country X. In such a way even the status of the previous c inter-regions amount invested changes its theoretical status of long-way flows into a newly added cooperation capital.

And now see also some specific results for this newly created circumstance:

● Both turnover and cooperation capital will rise and this for all: countries involved (W and X), regions and overall; individual countries and overall by c'; regional turnovers and cooperation capital by ½ c'.

● The assumed: $c \geq d+e+c'$ will let country W's FDI stocks balance non-negative and region R2's FDI stocks balance more highly positive than for country W.

● The rule of cooperation capital is here preserved by no FDI stocks deficit created.

**2.9 More DIA of country W for long-way flows.** We might suppose the same country W in region R2 investing in another region R3, country Q – i.e. this operation is likely, not only over-borders, but equally for non or less traditional business partnerships. Actually, country W invests the amount (flow) f in country Q of region R3, the third one involved in our scenario:

$$f(Q/R3) = f(W/R2) \qquad (6)$$

### 3. The model result and conclusions

See for Variant 1 the final accounting table of all transactions here above figured out:

**Tabel no.3 : V1/Final Accounting table**

| \Country Chapter | X | R1 | W | U | V | R2 | Q | R3 | Overall |
|---|---|---|---|---|---|---|---|---|---|
| Entries (FDI) | a'+b+c' | (a+a')+(b+b')+c' | c+(d'+e') | d | e | c+(d+e)+(d'+e') | f | f | (a+a')+(b+b')+(c+c')+(d+d)+(e+e')+f |
| Issues (DIA) | (a+b')+c | (a+a')+(b+b') +c | c'+(d+e)+f | d' | e' | c'+(d+e)+(d'+e')+f | | | (a+a')+(b+b')+(c+c')+(d+d)+(e+e')+f |
| FDI stocks balance* | (a'-a)+(b-b')+(c'-c) | c'- c | (c-c')+(d'-d)+(e'-e) -f | d-d' | e-e' | (c- c')-f | f | f | 0 |

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| \Country Chapter | X | R1 | W | U | V | R2 | Q | R3 | Overall |
|---|---|---|---|---|---|---|---|---|---|
| Turnover (Tv)** | (a+a')+(b+b')+(c+c') | (a+a')+(b+b')+ ½(c+c') = ½ (TvX+TvY+TvZ) | (c+c')+(d+d')+(e+e')+f | d+d' | e+e' | 1/2 (c+c')+(d+d')+(e+e')+1/2f | f | 1/2 f | (a+a')+(b+b')+(c+c')+(d+d')+(e+e')+f |
| Cooperation capital | a'+b+c' | 2a'+(b+b')+c' | c+(d'+e') | d' | e' | c+2(d'+e') | - | - | 2a'+(b+b')+(c+c')+2(d'+e') |
| Long-way flows | c | ½ c | c+f | - | - | ½ (c+f) | f | ½ f | c+f |

*Totals of turnovers, cooperation capital and long-way flows by regions will be according to the above theorems. For the overall column, there will be totals of regions accounted.

**There might equally be a>b and a<b.

***Turnover (Tv) is entries and issues cumulated in module numbers.

with residual difference as:

$$Tv - (Ccp+Lwf) = (a-a')-c'+(d-d')+(e-e')$$ (V1)

Let us have also Variant 2 in its final view:

## Tabel no.4 :V2/Final Accounting Table

| \Country Chapter | X | R1 | W | U | V | R2 | Q | R3 | Overall |
|---|---|---|---|---|---|---|---|---|---|
| Entries (FDI) | a'+b'+c' | (a+a')+(b+b')+c' | c+(d'+e') | d | e | c+(d+e)+(d'+e') | f | f | (a+a')+(b+b')+(c+c')+(d+d) +(e+e')+f |
| Issues (DIA) | a+b+c | (a+a')+(b+b') +c | c'+(d+e)+f | d' | e' | c'+(d+e)+(d'+e')+f | - | - | (a+a')+(b+b')+(c+c')+(d+d) +(e+e')+f |
| FDI stocks balance* | (a'-a)+(b-b')+(c'-c) | c'- c | (c-c')+(d'-d)+(e'-e) -f | d-d' | e-e' | (c- c')-f | f | f | 0 |
| Turnover (Tv)** | (a+a')+(b+b')+(c+c') | (a+a')+(b+b')+ ½(c+c') = ½ (TvX+TvY+TvZ) | (c+c')+(d+d')+(e+e')+f | d+d' | e+e' | 1/2 (c+c')+(d+d')+(e+e')+1/2f | f | 1/2 f | (a+a')+(b+b')+(c+c')+(d+d')+(e+e')+f |
| Cooperation capital | a'+b'+c' | 2(a'+b')+c' | c+(d'+e') | d' | e' | c+2(d'+e') | - | - | 2(a'+b')+(c+c')+2(d'+e') |
| Long-way flows | c | ½ c | c+f | - | - | ½ (c+f) | f | ½ f | c+f |

*Totals of turnovers, cooperation capital and long-way flows by regions will be according to the above theorems. For the overall column, there will be totals of regions accounted.

**There might equally be a>b and a<b.

***Turnover (Tv) is entries and issues cumulated in module numbers.

While the residual difference is expected to be:

$$Tv - (Ccp+Lwf) = (a-a')+(b-b') -c'+(d-d')+(e-e')$$ (V2)

Or, this is concluding in two complementary ideas regarding the *residual difference* in question:

●This (residual difference) is (a) up pressured by the intra-region capital that hasn't yet go back to the previous investor countries – i.e. imperfect intra-region cooperation capital -- and (b)down pressured by investments from the region to the rest of the world.

●Wherever imperfect cooperation capital within regions that rises this residual difference the last could be equally lowered by cooperation capital invested from the region to the rest of the world

●the way that this same residual difference might also go down to zero or even become negative number.

●These above stay equally valid for the two types of regions picked above. We have chosen in this respect:

●Variant 1 – for some rather diverse types of regions: those that become investor regions – e.g. Euro-zone and West Europe – and/or those on the FDI recipients side, but with some international investor countries within – e.g. East Asia, Near East, North Africa and Oceania (A&A 2019; 2020).

●Variant 2 – for the rest of regions – those in which there might exist one or a narrow minority of active(FDI&DIA significant) countries in international capital working, versus the rest of countries (ibidem).

●Inter-regional FDI-DIA flows stay as significant as to be studied apart and as influencing (back) cooperation capital and its part in total capital turnover, either. Cooperation capital and long-way flows turn into each-another in diverse circumstances. In other words there equally are aspects that become less important for all regions, in context, e.g.:

●how reach or, on the contrary, is that region in (international) capital (?)

●the type of working for this capital – e.g. that the region might be an investor one with high amounts of capital disposable, or, on the contrary, a FDI recipient region…

●The rule for all regions and the whole world is that the residual difference here above studied gets insignificant as a number that sees itself influenced in its both senses and so total international capital investments account for amounts nearby the sum between cooperation capital and, by half, the long-way flows – i.e. irrespective of that these last are entries into or issues off that region.

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