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The economic impact of FDI on Ukraine

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The economic impact of FDI on Ukraine

Executive Summary

In the public discussion, it is undisputed that Foreign Direct Investment (FDI) is an important factor in stimulating economic growth in Ukraine. At the same time, there is much less understanding of the actual role of FDI in the economy of Ukraine. Specifically, there is little up-to-date analysis of the FDI *stock* in Ukraine and even less analysis of the economic *effects* of FDI on Ukraine. The objective of this Policy Study is to fill these gaps by empirically analysing both issues. This is a challenge in Ukraine's context, as most of the FDI stock in Ukraine has been directed through financial hubs, especially the Netherlands and Cyprus. There is a lack of information on the final owners and a significant part of the FDI stock may be due to round-tripping domestic capital.

Our comprehensive empirical analysis, which is based on a unique Ukrstat dataset, shows conclusively that FDI does play an important economic role for Ukraine. Although the inward FDI stock of Ukraine has declined by about 30-60% (in USD value, according to different sources) since 2013 due to a combination of currency depreciation and the economic crisis, our analysis demonstrates that companies with FDI contribute strongly to Ukraine's economy.

Among non-financial corporations, the main focus of our analysis, FDI companies make up only 4.6% of companies, but employ 20.4% of employees and produce 34.9% of total Gross Value Added (GVA), which is a measure of output. FDI companies are significantly larger than non-FDI companies. On average, FDI companies produce 11 times more GVA per company and employ 5.3 times more employees than non-FDI companies. They are also more productive: Their labour productivity (GVA per employee) is on average 2.1 times higher and their total factor productivity is twice higher than that of non-FDI companies. This allows them to pay higher wages to their employees.

Our analysis also reveals interesting sectoral insights, as the FDI stock is concentrated especially in finance, trade, real estate and the food industry. In all industries, FDI companies are larger than non-FDI companies. However, the GVA share of FDI companies per industry is very unequally distributed. Among the industries with large FDI concentrations, positive productivity differentials – higher labour and total factor productivity of FDI companies – exist not in all sectors. While large positive productivity differentials exist in the food industry and ICT, no or even negative productivity differentials exist in the heavy industries (metals, mining, machine building) and agriculture. This might be a reflection of data limitations mentioned above, and requires further analysis.

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Table of contents

1. Introduction 2

2. Concepts and data 3

2.1 Concept of FDI 3

2.2 FDI stock data 4

2.3 Structural data of companies 5

2.4 Round-trip FDI 6

3. Analysis of FDI stock data 7

3.1 Evolution of the inward FDI stock 7

3.2 International comparison of size of FDI stock 9

3.3 FDI stock by countries of origin 11

3.4 FDI by target sector 13

4. Impact of companies with FDI on the overall economy 16

4.1 Aggregate impact of FDI on the economy of Ukraine 16

4.2 Impact of FDI on individual industries 21

4.2.1 The relative importance of FDI companies in different industries 21

4.2.2 The productivity of FDI companies in different industries 24

5. Conclusions 28

Annex 29

A1: Why is FDI important for transition economies? 29

A2: Structural survey variables 34

A3: Comparison of inward and outward GDP stock of Ukraine 35

A4: Comparison of GVA contributions of FDI companies with sector sizes 36

A5: Structural data for FDI companies and all companies in industry, non-financial sector, 2016 . 37

1. Introduction

Foreign Direct Investment (FDI) can play an important economic role for Ukraine. As the country requires more economic growth to provide better living standards for its population, inward FDI from other countries to Ukraine can contribute to this overall goal in two ways:

1. Improved access to capital: Full or partial foreign ownership can improve companies' access to capital, thereby supplementing limited domestic savings and leading to increased investments and a higher capital stock of companies.
2. Improved productivity: The presence of foreign investors in companies can enable these companies to benefit from know-how of these investors. As FDI investors often are large multinational companies, they can bring more modern management methods, supplier and customer (value chain) networks or other technologies into the companies that, when implemented, lead to higher productivity beyond pure increases of the physical capital stock.

However, the role of FDI in the economy of Ukraine is so far not well understood and documented in the public policy discourse. Apart from regular analyses of FDI *inflows* to Ukraine (which are important from a balance of payments perspective), there is little up-to-date analysis of the FDI *stock* in Ukraine and even less analysis of the economic *effects* of FDI on Ukraine. Whether policies aimed at increasing FDI inflows should be pursued depends not insignificantly on a proven, positive effect of FDI on Ukraine's economy.

This Policy Study aims to close this gap by providing an analysis of two key aspects of FDI:

1. The size, recent development and structure of the inward FDI stock of Ukraine, i.e. the aggregate of all foreign investments in Ukrainian companies that qualify as FDI
2. The economic effect of FDI on Ukraine. Do companies with FDI in their ownership structure differ substantially from companies without FDI in size, profitability and productivity?

The study will be structured as follows: In chapter 2, we discuss important concepts and the data used in the analysis. Chapters 3 and 4 contain the core of our analysis. In chapter 3, we provide a detailed analysis of the FDI stock of Ukraine, covering its size, development over the recent years, disaggregation by source countries and target sectors. In chapter 4, we then turn to the analysis of the economic effect of FDI on Ukraine through a methodological comparison of the part of the economy constituted by companies without FDI with the part of the economy made up by companies that have foreign direct investments in their ownership structure. Chapter 5 concludes.

2. Concepts and data

2.1 Concept of FDI

Foreign Direct Investment (FDI) is defined in the 4th edition of the OECD Benchmark Definition of Foreign Direct Investments (BDM4) as follows:

> *"Foreign direct investment (FDI) is a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor. The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise. The direct or indirect ownership of 10% or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship. …"* [1]

This is fully compatible with the International Monetary Fund's (IMF) Balance of Payments Manual, 6th edition: "*Direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy*"[2]. "Control or significant degree of influence" is here also associated with ownership of at least 10% of shares of a company.

Crucially, it must be noted that the notion of "investment" in the definition of FDI does denote investments from an investor's point of view, not investments in an economic sense. Although FDI companies make investments and own a share of the capital stock of Ukraine, as any other company, the FDI transactions themselves are merely cross-border acquisitions a of ownership of assets. Hence, FDI flows are statistically recorded in the balance of payments (under the financial account), in the external sector statistics and not in the national accounts (where investments and GDP are recorded). FDI transactions may or may not correspond to economic investments. If a foreign investor only purchases shares above 10% of the value of a company from a domestic investor (a "brownfield investment", see the discussion of the theory underlying FDI in Annex 1), the FDI transaction itself would not be directly related to investments in an economic sense. However, if a foreign investor starts a new company and purchases equipment for it (a "greenfield investment"), this would be recorded under "gross fixed capital formation" in the national accounts, corresponding to investments in an economic sense.

Shareholdings below the 10% threshold value are recorded as "portfolio investment" and do not classify as FDI as they do not yield enough influence to the investor to qualify for the "lasting interest" and "significant degree of influence on the management of the enterprise". Apart from equity shareholding, FDI is also made up by debt instruments, namely intercompany loans between companies already engaged in a direct investment relationship.

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[1] OECD, OECD Benchmark Definition of Foreign Direct Investments, 4th Edition, 2008, p.234

[2] IMF, Balance of Payments and International Investment Manual, Sixth Edition (BPM6), 2009, Washington DC, p. 100

2.2 FDI stock data

For the first component of our analysis in chapter 3, we focus on the inward FDI stock of Ukraine. This data describes the current market value of all FDI investments in Ukraine. There is no netting of this FDI against Ukrainian investments abroad: Ukrainian direct investments in other countries (the FDI outward stock) are no subtracted from the inward FDI stock. The FDI stock is generally calculated as the sum of all inward FDI transactions in Ukraine, including intra-company debt operations, adjusted by changes in the value of the shares. Different calculation methods for the value, depending on data source, will be discussed below, but they are generally based on the market capitalisation of companies listed on stock exchanges in Ukraine (in practice, this applies to only very few companies) and the book value of the capital (either statutory capital or equity) of non-listed companies as reported in their financial statements.

FDI in Crimea has been retrospectively removed from the data by Ukrstat. FDI in the non-controlled areas (NCA) in the Donbass is still in the data, with the market value of this FDI being determined just like that of any other FDI, i.e. principally resting on company's annual reports.

Three data sources exist for FDI stock data in Ukraine. All data sources are based on primary data collected by Ukrstat, which is then processed according to somewhat adjusted methodologies and published with different breakdown categories available. The three data sources for inward FDI stock of Ukraine are:

1. Ukrstat
2. The National Bank of Ukraine (NBU), external sector statistics
3. The IMF coordinated direct investment survey (CDIS), reported by Ukrstat

Note that the IMF CDIS data is effectively also Ukrstat data, as it is prepared and reported by Ukrstat, but according to the IMF CDIS methodology, which deviates from Ukrstat's methodology for its own publication of FDI data. Table 1 provides a summary and comparison of methodology and scope by data source:

Table 1: Comparison of scope and methodologies behind data sources

	Ukrstat	**NBU**	**IMF CDIS**
Difference from Ukrstat (primary source)	-	Added FDI in real estate	Multilateral survey, different valuation of unlisted comps
Breakdown by country	Yes, but for equity FDI only	No	Yes
Breakdown by industry	Yes, but for equity FDI only	No	No
Valuation of listed companies	Market capitalization	Market capitalization	Market capitalization
Valuation of unlisted companies	Statutory capital	Statutory capital	Equity

Source: Own display

Ukrstat and the NBU have recently largely harmonised their methodologies for calculating FDI, which leads to very limited differences in the data, mainly caused by the NBU adding estimates for FDI in real estate to Ukrstat's company-based collection of FDI. As can be seen in chapter 3, the difference caused by the in/exclusion of real estate FDI is very limited. Ukrstat publishes in general more advanced breakdowns of the FDI data, by source country and target industry, than the NBU (but for equity FDI only). However, the NBU publishes highly useful stock-flow reconciliation data that shed light on the mechanics underlying the dynamics of the change of the FDI stock over the years.

IMF CDIS data differs from the "domestic" data in one important respect: It includes a broader measure of non-listed companies' capital to establish the market value of companies and hence FDI stocks. Whereas the NBU and Ukrstat measure the market value by the statutory capital of non-listed companies, the CDIS data uses the concept of equity, which is the sum of statutory capital + additional capital + retained earnings – accumulated losses. Including retained earnings and accumulated losses makes for a much better measure of the current value of companies, as the statutory capital is a measure that is hardly ever altered by companies. Even this broader book value measure falls significantly short of the market capitalisation measure for listed companies, but is the best approximation of the current value that is practically available for non-listed companies. This criterion is not adapted by the NBU and Ukrstat because of their requirement to publish quarterly data, for which no full data on the equity value of companies is available, as only public companies are obliged to publish quarterly accounts.

2.3 Structural data of companies

Analysis of the economic effect of FDI on Ukraine in chapter 4 is based on structural company data collected by Ukrstat through a survey completed by a sample of non-financial companies. The data is then extrapolated to account for all non-financial companies. This data comprises the sales, employment, capital stock, profits and other structural indicators of companies and is generally published in aggregated form by industry at NACE 2 digit level.

Ukrstat has then been able to provide us with data in which the aggregate data was split sector-wise into two parts: The part of each sector made up by companies with FDI in their ownership structure and the part of each sector made up by companies without FDI in their ownership structure. This was achieved by using information from another survey on ownership and international connections filled in by all Ukrainian companies. Subsequently, the two unpublished micro data sets were matched by company codes and the structural dataset was separated into the FDI and non-FDI components. In effect, we can compare whether companies with FDI are different in their structural characteristics and important outcome variables compared to companies without FDI, by industry and for the aggregate economy of Ukraine.

24 variables (see Annex A2 for a full list) were obtained for 59 industries at NACE 2 digit level (no data or restricted information was reported for 6 industries and the usual restrictions, e.g. exclusion of military-related production apply). Variables include structural information on companies (number of companies, employees), financial information (sales, cost structure, profitability) and inventory information required for calculating the Gross Value Added (GVA) of companies.

As the key variable for output, we had to calculate the GVA, a measure of economic production similar to GDP but excluding taxes and subsidies, ourselves for each FDI/non-FDI component of each industry. This was achieved by subtracting the costs of intermediate goods from sales, adjusting the value by inventories for the value added at factor cost and then extrapolating the values to the GVA

by applying the coefficient of (value added at factor cost/published industry GVA), calculated for each whole industry (FDI and non-FDI companies).
As the data is based on the structural survey, it only yields the GVA of non-financial companies who answer this survey. This is not to be confused with the total GVA of Ukraine in the national accounts, which includes households (private entrepreneurs, self-employed and informal sector), general government, financial corporations and non-profit institutions. Also, calculation methods differ. Calculation of the "structural GVA" is simpler and less refined. The difference is significant: Total GVA of Ukraine in 2016 national accounts was UAH 2,023 bn. Total GVA of non-financial corporations used in the analysis in chapter 4 adds up to UAH 1,218 bn. Nevertheless, the "structural GVA" of non-financial corporations is in itself a consistent measure as long as it is not confused with the total GVA.

In addition to GVA, the data also enables us to calculate two further economically relevant concepts: Firstly, *average labour productivity* can be calculated by dividing GVA by the number of employees. This statistic measures how much value added is produced by each individual worker in an industry. It is crucially affected by the size of the capital stock, as the productivity of a worker is expected to rise if the worker is combined with more and better machines. By dividing this measure through the capital stock (fixed assets remaining value), we get to the measure of *total factor productivity (TFP)*, which measures how much value added is produced per employee and capital stock value. In effect, these measures show how productive companies are irrespective of the cost of the capital stock involved. Hence, it is a measure of the impact of non-physical technology and management methods on productivity. This measure will receive a great deal of attention in chapter 4.

2.4 Round-trip FDI

In Ukraine, analysing FDI faces the additional challenge of so-called round-trip capital. This designates officially recorded FDI from a foreign country that actually belongs to a resident of Ukraine as the final beneficiary. This is still recorded as FDI in the available statistics. The constructions of round-trip FDI generally do not permit tracing back the final beneficiary owner as they often involve Special Purpose Entity (SPE) companies in tax havens or other financial hubs, being frequently used to evade taxes or conceal ownership structures for other reasons. Efforts directed at better tracing of final beneficiaries, which have already yielded significant results in the financial sector, for all investments are under way, but have not yet led to a significant clean-up of FDI data.

For Ukrainian FDI stock data and structural data separated into FDI and non-FDI components, this is a serious issue. It is assumed that significant components of inward FDI of Ukraine, especially from financial hubs such as Cyprus or the British Virgin Islands (BVIs), but also from the UK or Austria, are in fact round-trips of domestic capital. Hence, two problems are likely to persist in the data:

1. Overestimation of the inward FDI stock: As round-tripping FDI is not actual FDI as intended by the capital, the presence of round-tripping FDI will present an upward distortion of the aggregate inward FDI stock.
2. Distortion of the comparative analysis of the FDI and non-FDI components of the economy. Part of the idea of comparing these components is that foreign ownership can bring access to more capital and/or better management methods and other modern and innovative technologies for Ukrainian companies. Of course, round-trip FDI does probably not carry these characteristics.

In chapter 3, we present some analyses directed at deriving conclusions about the impact and magnitude of round-trip FDI on Ukraine. However, the analysis of the economy by FDI and non-FDI components cannot eliminate round-trip FDI from its source data. Comments about likely distortions are made in the chapter.

3. Analysis of FDI stock data

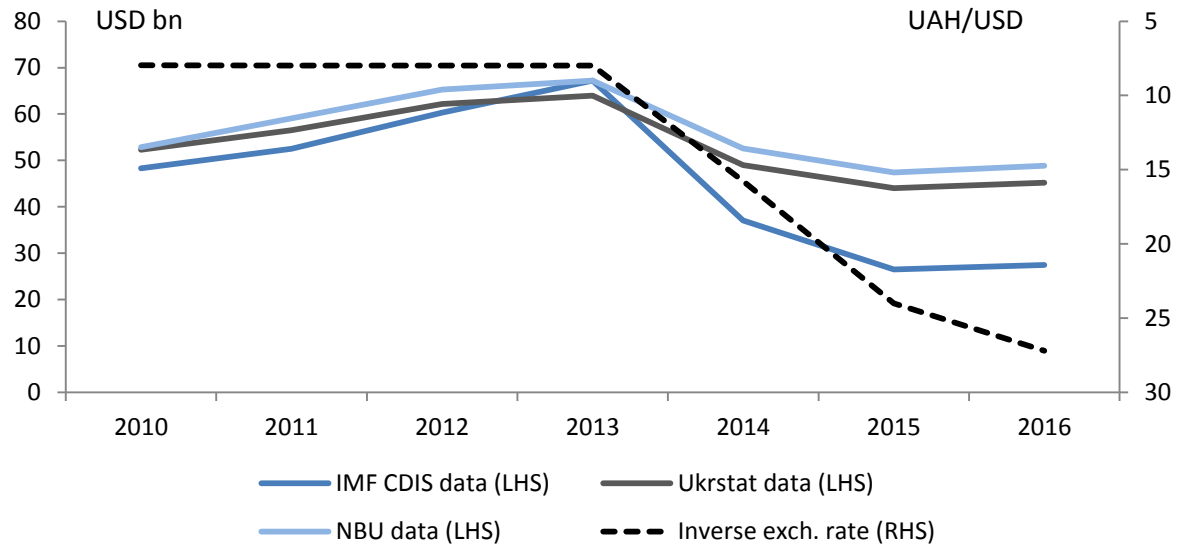
We begin our analysis by investigating the evolution and distribution of the inward FDI stock of Ukraine. Compared to more common analyses of FDI flows alone, this has the advantage that we look at the entirety of foreign direct investment in Ukraine, not just recent acquisitions. Only the full FDI stock reveals, where foreign investors exert a significant influence on companies. We will first look at the evolution of the inward FDI stock and will compare the size of the FDI stock in Ukraine with benchmark countries, before looking at the distribution of the FDI stock by source countries and by target sectors.

3.1 Evolution of the inward FDI stock

The inward FDI stock of Ukraine was increasing until 2013 and then decreased significantly in the wake of the economic and political developments affecting the country. The three data series available show relatively similar values up to 2013, where the value of the FDI stock peaked at USD 67 bn (IMF CDIS and NBU data series). Afterwards, the data series diverge in the extent, but all display a pronounced drop in the market value of the FDI stock.

The value decreases from USD 67 bn to USD 27 bn in the IMF CDIS data series, from USD 67 bn to USD 49 bn in the NBU series and from USD 64 bn to USD 45 bn in the Ukrstat series. Hence, the value of the FDI stock, in USD value, decreased by 29% (Ukrstat/NBU) to 59% (IMF CDIS). What were the driving forces for this decrease and which data source best describes the actual development of the market value of the FDI stock?

Figure 1: Gross inward FDI stock of Ukraine 2010-2016



Source: NBU, IMF Coordinated Direct Investment Survey

One key reason for the decrease of the FDI stock's USD value is the USD/UAH exchange rate. As the vast majority of the FDI stock is denominated in UAH (main exception: debt FDI), the sharp depreciation of the UAH was clearly one key determinant of the reduction in market value of the FDI stock. This factor should be reflected equally in all three data sources.

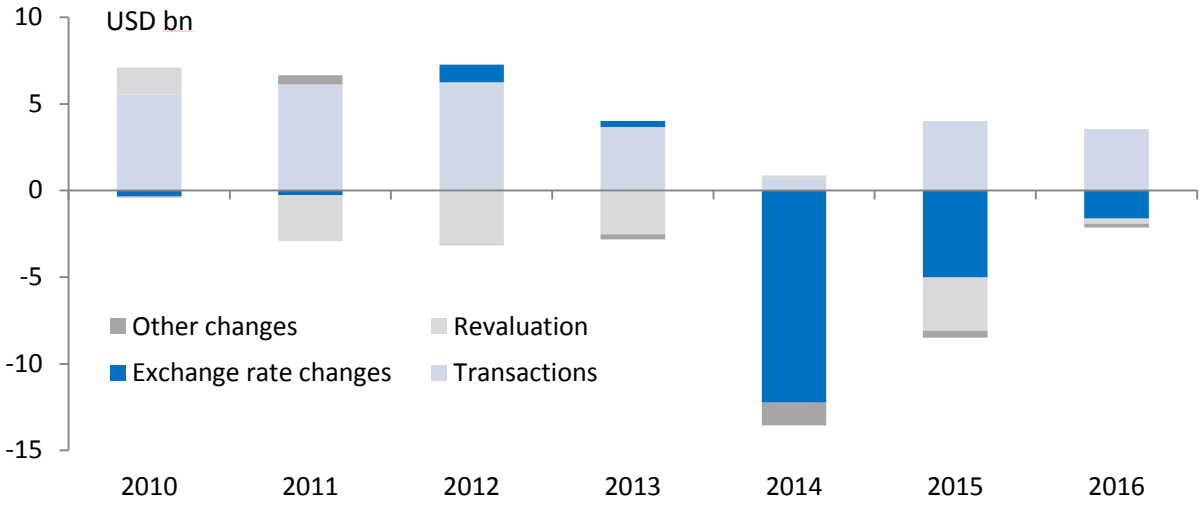
The other main reason for the FDI stock's value plunge is the effect of the worsened economic situation in Ukraine after 2013. Recession and conflict led to significant decreases in the business

activity and value of many companies across Ukraine. This is not equally reflected in all three data series.

Whereas the NBU and Ukrstat data series (which, due to harmonized methodologies only differ by the inclusion of real estate FDI in the more comprehensive NBU series) only account for changes in the statutory capital of unlisted companies, the IMF CDIS data series also includes retained earnings, accumulated losses etc. in the calculation of the value of unlisted companies.

As write-downs of statutory capital happen only very rarely, mostly in the context of government-forced recapitalization and cleanups of banks, the IMF CDIS data series captures much more accurately the real market value of the FDI stock. Hence, the value of the inward FDI stock of Ukraine between 2013 and 2016 decreased by around 59% to USD 27 bn by the end of 2016.

Figure 2: Adjustment of FDI stock data 2010-2016 (stock-flow reconciliation)



Source: NBU
Note: For equity FDI only

The forces driving the evolution of the FDI stock value in the NBU/Ukrstat data series can be seen in Figure 2 (note that this explains only the evolution in the NBU/Ukrstat series, not in the IMF CDIS series and that it only refers to equity FDI). Clearly, the lion's share of the downward correction in value of the FDI stock after 2013 was due to the total effect of the exchange rate changes, knocking USD 18.88 bn off the value of the FDI stock between 2014 and 2016.

"Revaluation" of the FDI stock, i.e. changes in the book and market value of the companies in which FDI is invested, only accounted for value reductions of USD 3.3 bn in 2015 and 2016. Note that hardly any companies in Ukraine are listed on stock exchanges; hence most valuations are based on the book values of unlisted companies. Interestingly, transactions – i.e. inflows of FDI – remained positive throughout the observation period. However, the existence of capital controls in Ukraine would have prevented real outflows of FDI. Furthermore, certain FDI inflows were related to recapitalisation of companies (e.g. banks in distress) by their owners, using foreign funds.

What would be the difference between the evolution of the FDI market value in this Ukrstat/NBU series and the IMF CDIS series? As the single conceptual difference between the data series is the inclusion of the broader equity measure (including retained earnings / accumulated losses) for assessing the market value of unlisted companies in the IMF CDIS series, the difference must be in

"Revaluations", which will be far more important in the IMF CDIS series and would likely make up all the further USD 22 bn of FDI value losses incorporated in that data series.

Hence, for the more accurate assessment of the development of the FDI stock, more than half of the 2013-2016 decrease of FDI stock market value would have been due to revaluation of the FDI stock and less than half of the decrease due to exchange rate effects.

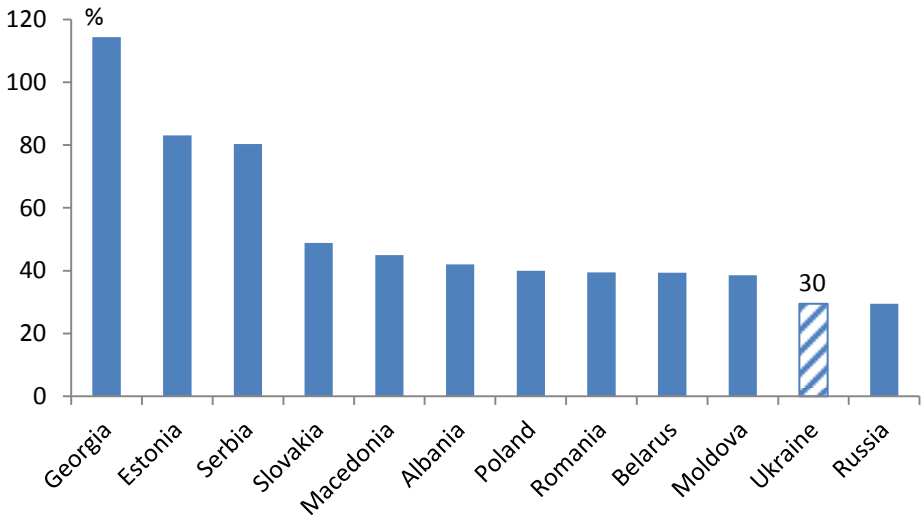
Conclusions:

- Between 2013 and 2016, the value of the FDI stock in Ukraine decreased by around 59% to USD 27 bn due to the combination of the depreciation of the Ukrainian currency and reductions of the local currency value of the FDI stock.
- Of the available data, the IMF CDIS series presents the most accurate picture of the value of the FDI stock.

3.2 International comparison of size of FDI stock

Compared to relevant benchmark countries, it is evident that the inward FDI stock of Ukraine remains quite small. In 2016, the value of the FDI stock in Ukraine was at about 30% of the country's annual GDP. Only Russia had a smaller FDI stock in relation, 29% of its annual GDP. Nearby Moldova, Belarus and Poland all have inward FDI stocks worth around 40% of annual GDP. Estonia, which has begun substantial economic modernisation and institutional reform years ago, even has managed to attract FDI worth 83% of its annual GDP. The massive FDI in Georgia, worth 114% of annual GDP also reflects the success of Georgia's reforms, but is also somewhat distorted by large investments in gas transit infrastructure. The recent economic woes of Ukraine have not substantially affected Ukraine's relative position in this benchmark, as both the value of the FDI stock and the GDP of Ukraine have decreased similarly in USD terms.

Figure 3: FDI stock, % of GDP, 2016

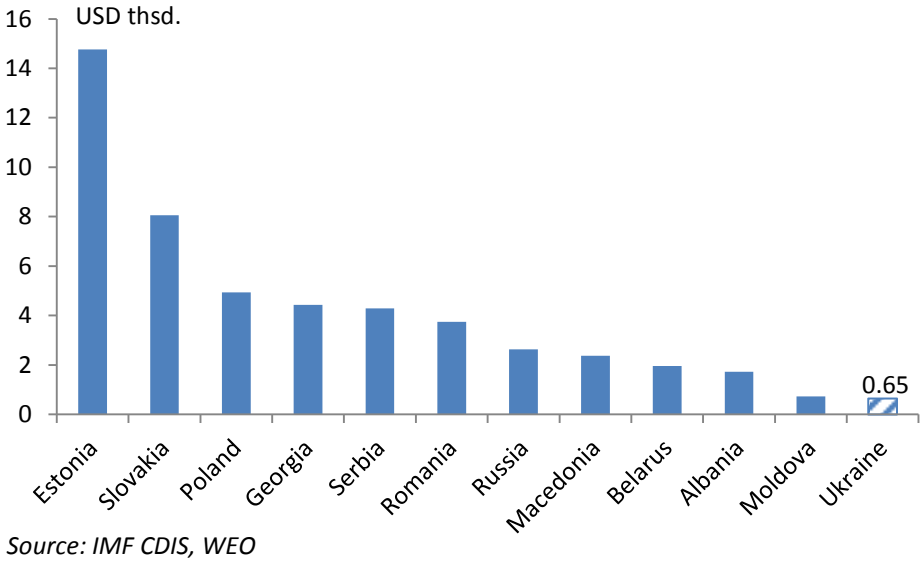


Source: IMF CDIS, WEO

Using an alternative measurement, FDI in USD per capita, Ukraine's position in the ranking deteriorates to the last place among the benchmark countries selected here with only USD 650 of FDI stock value per Ukrainian individual. Of course this statistics has been negatively affected by the

depreciation of the Ukrainian currency in recent years, nevertheless the distance to countries such as Estonia (USD 14,800 per capita) or Poland (USD 4,900 per capita) is striking.

Figure 4: FDI per capita, 2016



Source: IMF CDIS, WEO

In sum, it is apparent that Ukraine has not been very successful in growing the FDI stock in the past years compared to benchmark countries in the region. If the later analysis should show that indeed FDI has a positive economic effect on Ukraine, then efforts should be redoubled to increase FDI attraction, although international assessments do already indicate that in the last few years, Ukraine has made progress in improving its investment policy framework, hence increasing Ukraine's attractiveness to international investors[3].

Conclusion:

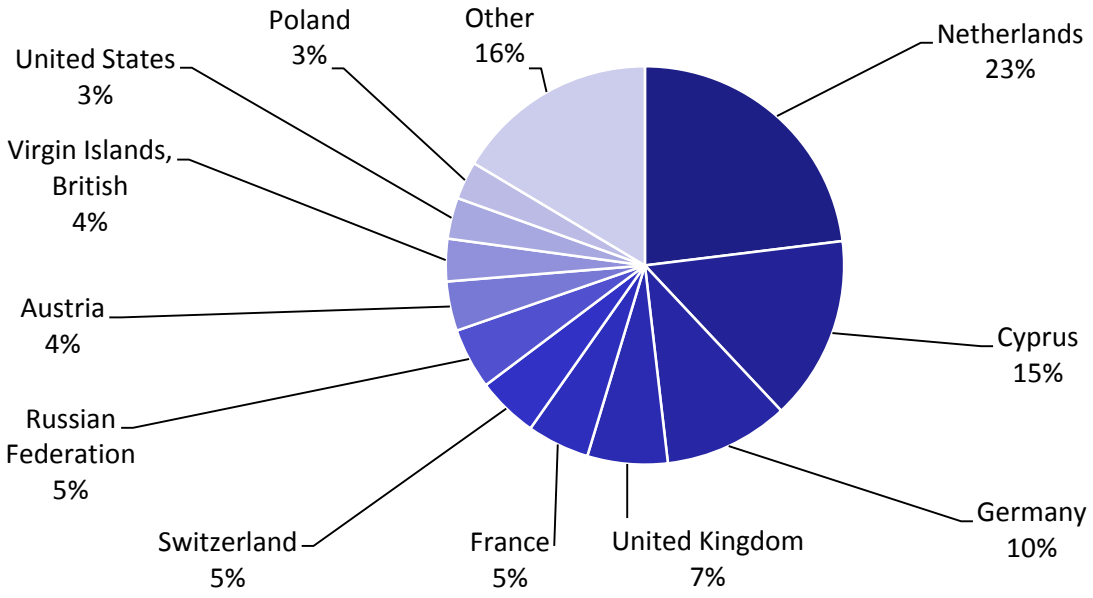
- The value of the inward FDI stock in Ukraine is relatively limited when compared to benchmark countries in the region, both measured as USD per capita or as a share of annual GDP.

[3] OECD Investment Policy Reviews: Ukraine 2016

3.3 FDI stock by countries of origin

The breakdown of the FDI stock by source countries reveals a striking distribution. Rather than large global economies, the Netherlands and Cyprus are the prime source countries of FDI to Ukraine with 23% and 15% of the inward FDI stock of Ukraine originating in the Netherlands and Cyprus, respectively. Only then do large European countries (Germany, UK, France) appear in the second class of FDI source countries. In general, financial hubs (among which the Netherlands, Switzerland, Austria, the BVIs and, arguably, the UK can be counted) make up the lion's share of FDI in Ukraine. In fact, Cyprus long was the number 1 source country for FDI to Ukraine, only displaced by Netherlands due to large value losses of FDI from Cyprus since 2013.

Figure 5: FDI by source countries, 2016



Source: IMF CDIS, 2016

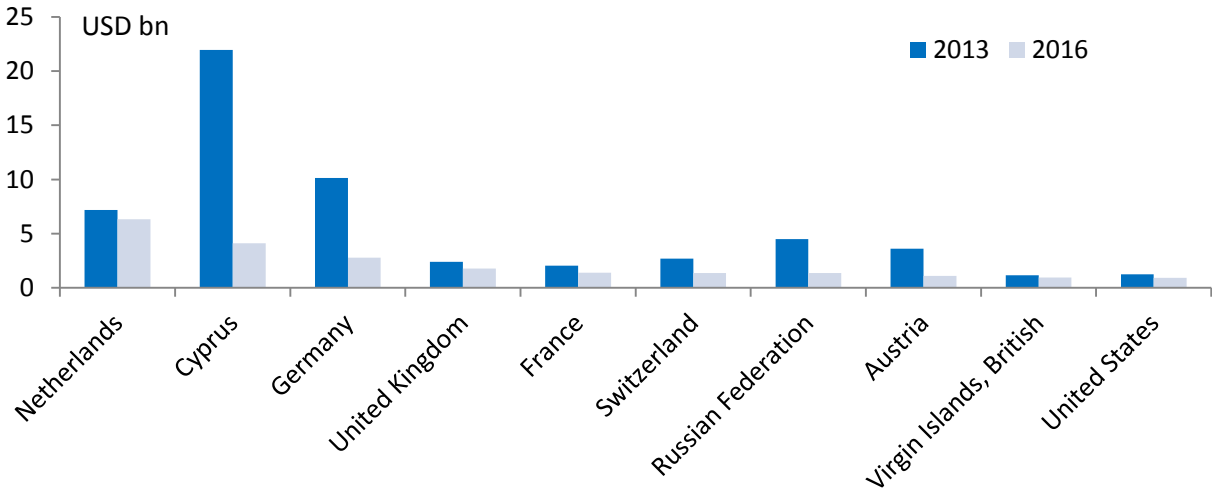
Of course, the predominance of financial hubs in the FDI source countries indicates that most of the FDI does not truly originate in these countries. Instead, very often, investors use Special Purpose Entities (SPEs) in financial hub countries to organise their FDI transactions for a variety of reasons, including convenient (tax) legislations and investment protection treaties, but sometimes also in order to mask the ultimate beneficiary of the FDI.

The data displayed here will also contain significant volumes of round-trip FDI. This has some repercussions for interpretation of the data. Especially when comparing companies with FDI with companies without FDI in chapter 4, one should expect a significant difference between companies with "real" FDI and companies with round-trip FDI, as the former may likely be linked to more transparent and modern management and the latter rather to the opposite.

Experts suggest that round-trip FDI may be particularly prevalent in FDI from Cyprus, where it may make up to 50% of the total volume. It may also, to similar or lesser extents, exist in significant quantities in FDI from the Netherlands, UK, Switzerland, Austria and the BVIs. Analysis of the outward FDI stock of Ukraine (see Annex A3) also somewhat reinforces the expert opinions indicating the large importance of round-trip FDI from Cyprus. However, it would be misguided to exclude FDI from Cyprus and the other likely source countries of round-trip FDI from the analysis, as these countries are also used as conduits for investments by genuine FDI investors from third countries.

Even a significant share of the FDI attributed to Germany is ultimately from a third country. A large share of FDI from Germany is actually FDI of a global steel company with roots in India.

Figure 6: Inward FDI stock by country, 2013 and 2016



Source: IMF CDIS

The reduction of the inward FDI stock's value between 2013 and 2016 also was quite differentiated across the different countries of origin of FDI. As Figure 6 shows, significant write-downs of the market value between 2013 and 2016 occurred for the FDI stock from Cyprus (from USD 22 bn to USD 4 bn, 81 %) and Germany (from USD 10 bn to USD 3 bn, 72%). In percentage terms, significant write-downs also occurred in the FDI stock from Austria (70%) and Russia (70%). Interestingly, FDI from the Netherlands appears much less affected by this problematic period. The market value of the FDI stock from the Netherlands decreased only by 12% from USD 7.2 bn to USD 6.3 bn.

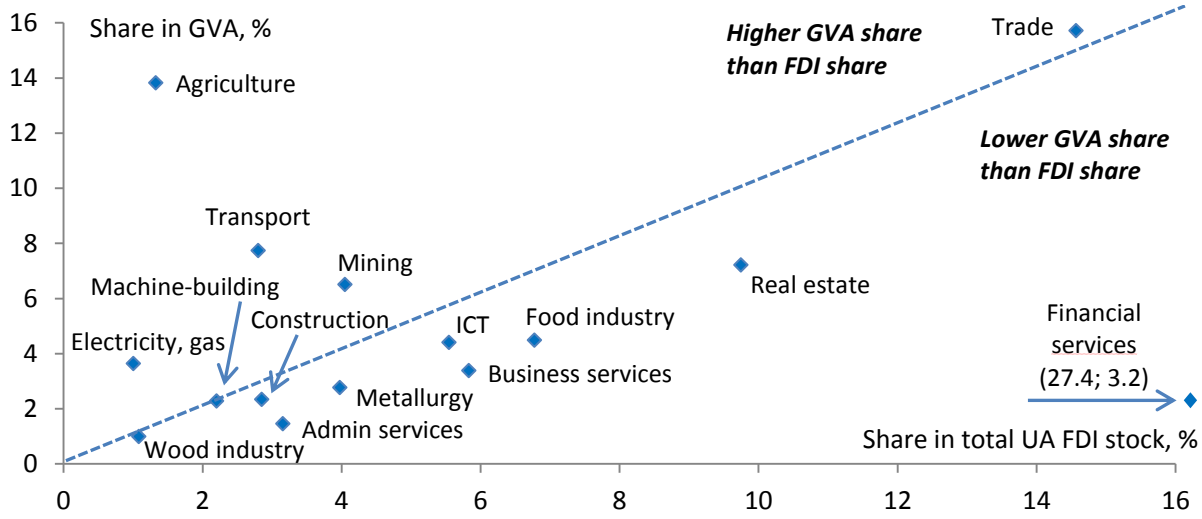
Conclusions:

- Financial hubs with a high prevalence of SPEs are the main immediate source countries of FDI for Ukraine. The Netherlands are the main source country of FDI in Ukraine (23%), followed by Cyprus with 15%.
- Large European countries such as Germany, the UK and France only come in the next category of FDI source countries.
- The distribution of the ultimate source countries of FDI in Ukraine and the extent of round-trip FDI, likely to account for a significant share of FDI from financial hubs, is not known at present.

3.4 FDI by target sector

FDI in Ukraine is unequally distributed across target sectors in the economy. Ukrstat data on target sectors of equity FDI – the only data source that offers this breakdown – reveals that financial services received the single largest individual share of FDI. The inward equity FDI stock in this sector was worth USD 10.3 bn in 2016, 27.4% of the value of the total equity FDI stock in Ukraine at that time (according to the valuation method in the NBU/Ukrstat series). Also, there is a large FDI stock of almost 10% of total FDI in real estate. Within the real sector, trade accounts for the largest single share of the FDI stock at 16%, slightly above the sector's share in the country's Gross Value Added (GVA) of 15%.

Figure 7: Industry shares of GVA and FDI, 2016



Source: Ukrstat, own calculations
Note: Equity FDI only, industries with < 1% of total FDI stock omitted

The share of the FDI stock in most production sectors corresponds quite closely to the GVA share, with the food industry and metallurgy having slightly larger shares in FDI than in GVA, hence having attracted relatively large shares of FDI. Transport, electricity & gas and mining have attracted relatively less FDI compared to their GVA shares.

An important low outlier is agriculture: Despite accounting for 14% of the GVA of Ukraine, only 1.3% of the FDI stock of Ukraine is in the agricultural sector. This looks at first like a surprisingly low foreign ownership share in a major export sector of Ukraine. However, several factors may explain it: Firstly, several agricultural companies are listed on stock exchanges, especially in Warsaw, Poland and may have large, but granular foreign investments that would hence, falling short of the 10% criterion for classification as FDI, be counted as portfolio investment. Secondly, many agricultural companies are in turn owned by Ukrainian trading companies. As the trading companies are, a particularity of business practice in Ukraine, often used as the effective head company for the agricultural business, FDI stakes in the trade companies (there is proportional FDI in the trade sector compared to its value added share) may in fact effectively correspond to FDI in agriculture. Thirdly, restrictions on land ownership transfers may also have deterred FDI in agriculture.

As the breakdown of FDI stock by target sector is only available in the Ukrstat data series, analysis of the dynamic evolution of the FDI stock in the sectors is not possible, as this data series employs too narrow a capital measures (statutory capital of non-listed companies alone) for measuring the current market value of FDI. This is somewhat unfortunate, as it could be hypothesised that the

economic circumstances in the past years may have differentially affected the value of the FDI stocks in the different sectors. Especially the large FDI in finance may have decreased in actual value during the recent years and in the course of the banking sector clean-up (but was also buttressed by significant recapitalisation FDI inflows), but FDI in other sectors was probably also strongly affected.

Conclusions:

- A large share of FDI in Ukraine is concentrated in the finance sector. Substantial shares of FDI are also invested in the trade and real estate sectors.
- FDI in the production sectors appears generally allocated relatively proportional to sectoral importance in producing value added, with relatively strong FDI in the food industry, IT and metallurgy and weaker FDI in transport or mining.
- Agriculture has received little direct FDI, but FDI stakes in the sector may exist indirectly.

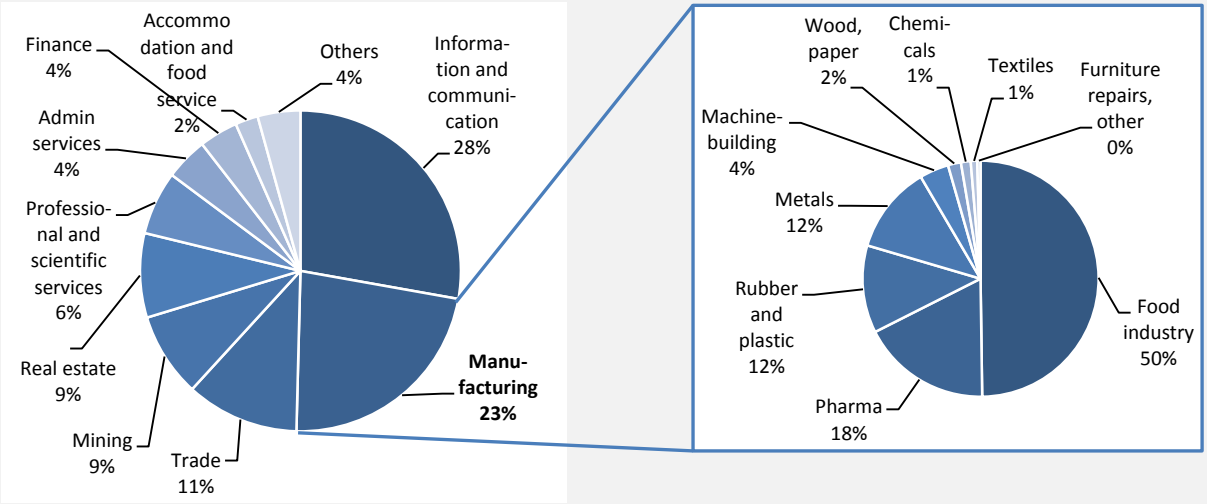
Box 1. Target sectors of FDI from three largest direct source countries

As data exists for FDI by target sectors also further differentiated by FDI source country, we can shed some further light on the investment profiles for FDI from the three largest source countries of FDI to Ukraine, the Netherlands, Cyprus and Germany.

Netherlands

The single largest share of FDI from the Netherlands is invested in the Information and Communication (ICT) sector. This may in part explain, why FDI from the Netherlands did not decrease as substantially in value over the 2013 – 2016 period as FDI from other countries, as the ICT sector (including the thriving IT industry and telecommunications) has probably been the most resilient sector during the times of economic crisis.

Figure 8: FDI from the Netherlands by target sector



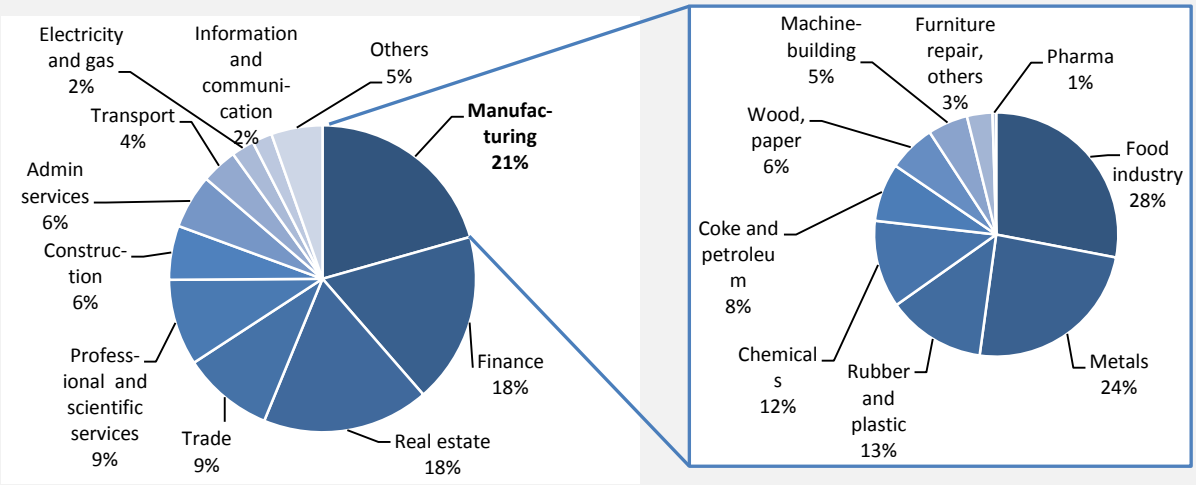
Source: Ukrstat

Large shares of Dutch FDI are also invested in the manufacturing sector, especially in food processing and pharma, and in trade and mining. Overall, this profile appears to replicate quite well the commonly perceived strengths of the Dutch economy. The FDI target sector profile hence appears driven at least party by the specialisations of the source country.

Cyprus

FDI from Cyprus follows a noticeably different pattern. Overall, FDI is quite differentiated across sectors, with a mixed investment in several manufacturing sectors constituting the single largest slice. However, a concentration on investment in the finance and real estate sectors (each making up 18% of total FDI from Cyprus) is apparent.

Figure 9: FDI from Cyprus by target sector



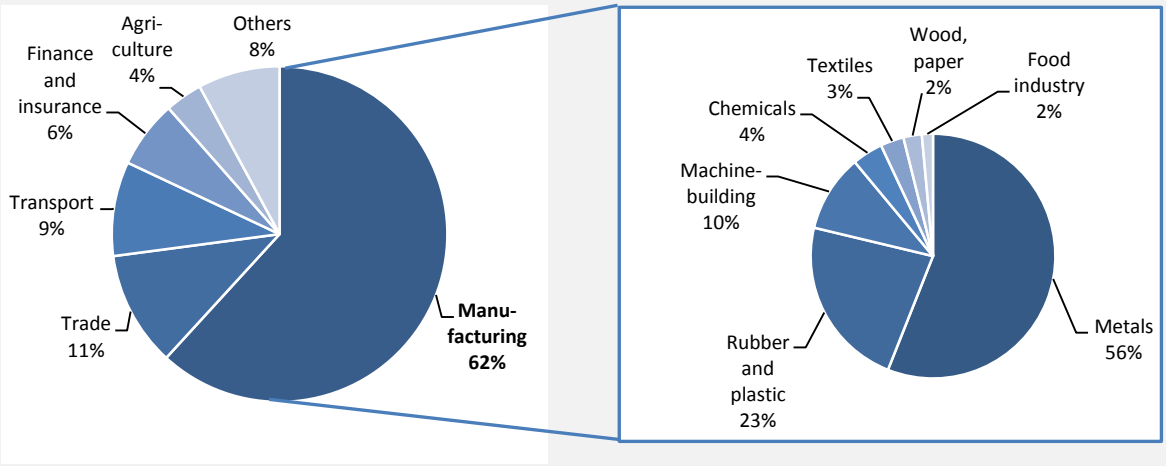
Source: Ukrstat

The large concentrations in FDI in finance and real estate may explain why FDI from Cyprus decreased substantially in value between 2013 and 2016, as these sectors were hit hard by the economic crisis. Overall, the relatively diversified nature of FDI from Cyprus may be due to role of Cyprus as an international financial hub for investments in Eastern Europe, hence leading to investments of very heterogenous investors being routed through Cyprus.

Germany

The manufacturing sector, especially the large investment in the metal industry by Arcelor Mittal, dominates the sector profile of German FDI in Ukraine.

Figure 10: FDI from Germany by target sector



Source: Ukrstat

Overall, German FDI in Ukraine is relatively undiversified compared to FDI from the financial hubs of the Netherlands and Cyprus, where very different investors use SPEs for FDI transactions in heterogenous sectors. The focus on manufacturing appears to reflect the strength of the German economy in the manufacturing sector.

4. Impact of companies with FDI on the overall economy

After the analysis of the FDI stock of Ukraine, we now turn to the second and main focus of this study: Investigation of the question whether FDI has a positive economic impact on Ukraine. We will investigate this question by comparing that portion of the economy made up of "FDI companies" (companies in which international investors own at least one stake of at least 10%) with the portion of the economy made up of companies without FDI ("non-FDI companies"). For this analysis, we use the "structural data" from Ukrstat as described in chapter 2.3, which differs from the more commonly used national accounts GVA data by its restriction to non-financial corporations (hence exclusion of households, government, financial corporations and non-profits) as well as some differences in calculation methods. We will first analyse this for the entire non-financial sector of the economy before turning to a more detailed look at the individual industries of the economy.

4.1 Aggregate impact of FDI on the economy of Ukraine

Slightly less than 14,000 FDI companies existed in Ukraine in 2016 that are partly (or fully) owned by FDI investors, a relatively small share of 4.6% of all 301,000 companies in Ukraine. However, these companies employ 1.1 million people, out of 5.6 million employed people in total and produced a Gross Value Added (GVA) of UAH 425 bn. They also own a substantial part of the total capital stock of private companies (current value), UAH 657 bn of UAH 2,743 bn in total.

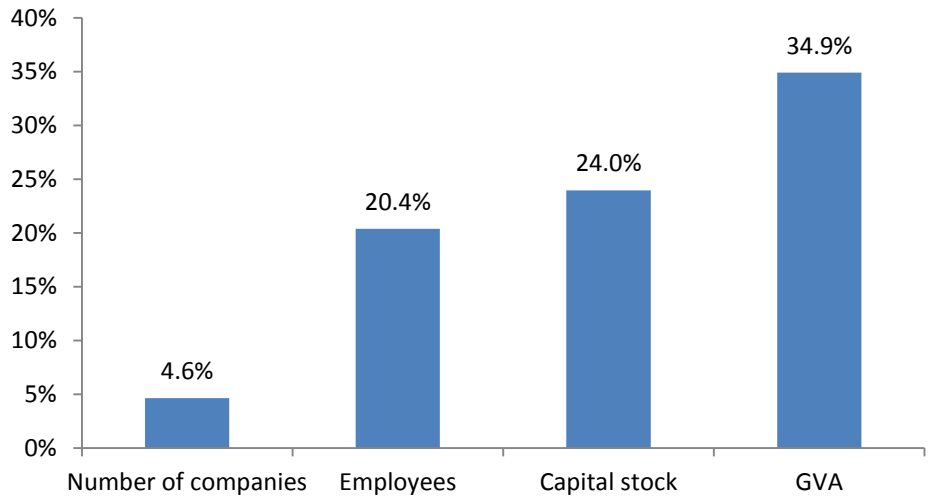
Table 2: Aggregate statistics of non-financial corporations, 2016

	All companies	FDI companies	Non-FDI companies
Number of companies	300,954	13,946	287,008
Employees, thsd	5,565	1,134	4,431
GVA, UAH bn	1,218.3	425.4	792.9
Capital stock, UAH bn	2,743.0	657.1	2,085.9

Source: Ukrstat, own calculations

Hence, although FDI companies made up only 4.6% of companies in Ukraine, they employ 20.4% of salaried employees, own 24% of the private capital stock and produce 34.9% of GVA.

Figure 11: FDI companies, share of all companies in Ukraine, 2016



Source: Ukrstat, own calculations

Hence, it appears that the companies with FDI are larger and more productive than companies without FDI. Indeed, comparing average performance and structural indicators of companies with and without FDI confirms this intuition.

Table 3: Average statistics of non-financial corporations, 2016

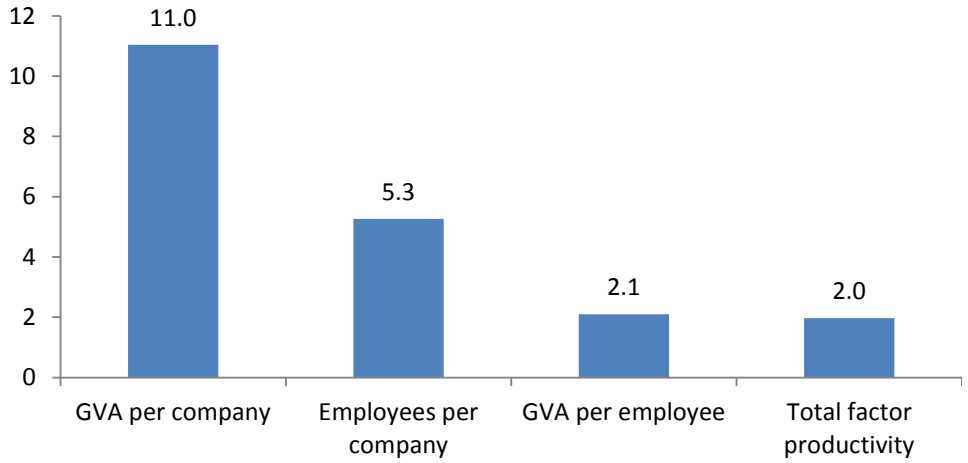
	All companies	FDI companies	Non-FDI companies
GVA per company, UAH m	4.0	30.5	2.8
Employees per company	18.5	81.3	15.4
GVA per employee, UAH thsd	218.9	375.1	179.0
Total factor productivity	0.271	0.442	0.224

Source: Ukrstat, own calculations

Whereas FDI companies on average produced a GVA of UAH 30.5 m in 2016, non-FDI companies only produced a GVA of UAH 2.8 m. The average for all companies in Ukraine was at UAH 4 m. Hence, as shown in figure 12, FDI companies have an average GVA 11 times as large as non-FDI companies (the "performance ratio" of FDI vs. non-FDI companies). Even if there may be some issues in the data with "zero companies", i.e. companies without activity, and this may affect non-FDI companies more strongly than FDI companies, this is a huge difference in average GVA produced. What explains this productivity advantage of FDI companies?

Is it simply company size? FDI companies appear to be, quite simply larger than non-FDI companies. They employ on average 81 employees compared to an average of 19. However, the larger size of the workforce of FDI companies does not explain the entire average GVA differential. Even dividing GVA by the number of employees, FDI companies produce on average 2.1 times the GVA per single employee that the average non-FDI company produces. Hence, FDI companies have a labour productivity of more than twice that of non-FDI companies.

Figure 12: Performance ratio of FDI companies vs. non-FDI companies, 2016



Source: Ukrstat, own calculations
Note: "Performance ratio" denotes the value for FDI companies divided by the value for non-FDI companies

FDI companies are not only larger, but also more productive per employee. Could better access to capital explain the difference? After all, FDI companies may have better access to capital sources and have a larger average capital stock. Figure 11 showed that 24% of the capital stock is owned by only 4.6% of companies with FDI.

In order to analyse whether the larger capital stock of FDI companies explains the apparent productivity advantage, we turn to the notion of "Total Factor Productivity" (see box 4). In short, this indicator measures the productivity of companies per unit of labour and capital input employed.

Box 2. Total Factor Productivity (TFP)

The TFP is an economic concept that measures the portion of output not explained by the amount of inputs used in production. It is derived from a standard theory of production based on the "Cobb-Douglas production function" that explains the output of companies by three factor inputs, Capital (K), Labour and TFP (A) in the following functional form:

$$Y = A * K^{\alpha} * L^{1-\alpha}$$

Where α, the parameter measuring the relative importance of capital and labour in production is usually estimated as 0.3 for capital and 0.7 for labour as the average value in the economy. Hence, TFP can be calculated as

$$A = \frac{Y}{K^{\alpha} * L^{1-\alpha}} \ .$$

In the macroeconomic literature, one key use of TFP is in the context of the Solow growth model, where TFP growth is a key explanation of long-run growth. For the purpose of this paper, however, the usefulness of this measure is that it allows us to understand the reason for differences in the output (GVA) between FDI companies and non-FDI companies. A higher TFP of FDI companies compared to non-FDI companies (in aggregate or in a specific industry) implies that FDI companies are not only larger – employing more people and/or a larger capital stock, but that they are genuinely more productive, that they create more value added per employee and unit of capital stock[4].

Indeed, our analysis in Table 3 and Figure 12 shows that FDI companies have a substantially higher TFP than companies without FDI. The TFP of FDI companies is higher by a factor of two than the average TFP of non-FDI companies. This implies that FDI companies are not simply larger than their non-FDI counterparts with respect to larger labour forces or capital stocks: They are genuinely more productive.

Where could this productivity advantage stem from? Conceptually, two explanations may exist:

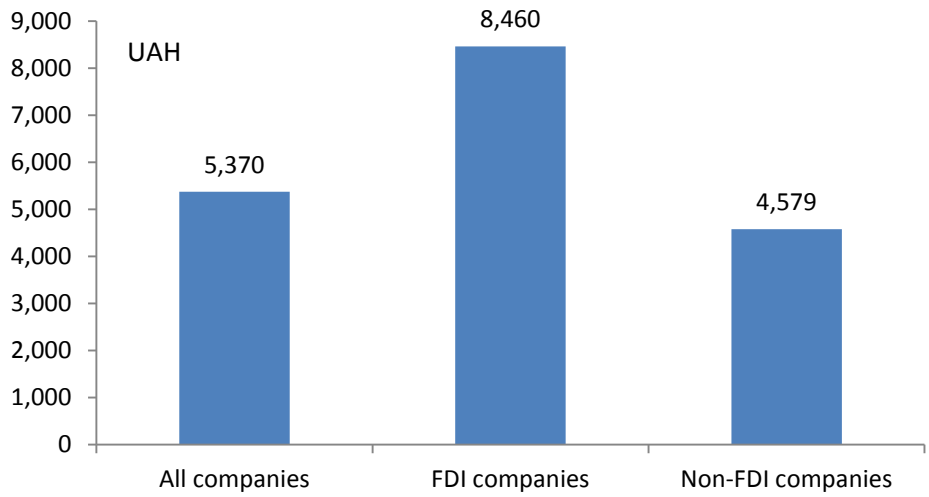
1. Higher quality of the labour and capital inputs: Although TFP controls for the magnitude of the labour and capital inputs of companies, it may be that the employees or the capital stock of FDI companies is simply better than average: They may have been able to recruit more productive workers. Indeed, Figure 13 shows that the average monthly labour costs per employee of FDI companies were 57% higher than average costs per employee, indicating higher wages and hence a more qualified workforce. For the capital stock, although our TFP calculation already factors in the current book value of the capital stock, FDI companies may have had access to machinery and other capital that, for same book values as other capital, is simply better.

[4] Intermediate goods usage is already subtracted and does not figure in this analysis as we use GVA rather than sales as our output variable.

2. Better management and other nonmaterial benefits of foreign ownership: FDI companies may be better managed than the average companies. This could be due to owners – which may be single investors or multinational corporate parents – requiring the implementation and use of more efficient management or other techniques at different levels. Also, ownership stakes e.g. of large multi-national corporations may bring with them access to networks of buyers and suppliers and other benefits leading to higher profitability and productivity.

Our analysis cannot fully explain why FDI companies over and above controllable variables such as labour or capital inputs are more productive than non-FDI companies. However, we can definitely state that, on average, FDI companies in Ukraine are larger and more productive than purely domestically owned companies and pay higher wages.

Figure 13: Monthly cost per employee, 2016



Source: Ukrstat, own calculations

How do FDI-owned companies further contribute to Ukraine's economy? Analysis of the profits and losses and social security contributions reveals an interesting pattern. Although FDI companies are more productive than domestically owned ones, at least in 2016, our year of analysis, they were more likely to be running at a loss than domestically owned companies. On average, 73% of companies in Ukraine ran at a positive annual profit. However, only 53% of FDI companies generated a profit in 2016. Hence, FDI companies in 2016 made up only 3% of all profitable companies, but 8% of loss-making companies.

Table 4: Profits and losses of companies, 2016

	All companies	FDI companies	Non-FDI companies
Share of profitable companies, %	73	53	74
Profit of profitable companies, UAH bn	432.9	134.1	298.8
Losses of loss-making companies, UAH bn	362.8	174.6	188.2
Aggregate financial result (pre-tax), UAH bn	70.1	-40.5	110.6
Social contributions, UAH bn	74.9	21.5	53.3

Source: Ukrstat, own calculations

Furthermore, although the relatively small share of 3% profitable companies made up 31% of aggregate corporate profits in Ukraine in 2016, the loss-making FDI companies (8% of all loss-making companies in Ukraine) produced UAH 174.6 bn losses, 48% of all corporate losses in Ukraine in 2016. The aggregate pre-tax financial result of FDI companies was a loss of UAH 40.5 bn compared to profits of UAH 110.6 bn of non-FDI companies.

However, deeper analysis reveals that this substantial aggregate pre-tax financial loss of FDI companies was generated in a relatively small number of sectors. FDI companies in the real estate sector alone generated a pre-tax loss of UAH 20.8 bn, FDI companies in the chemicals sector generated a loss of UAH 16.1 bn. Smaller aggregate pre-tax financial losses of FDI companies also accrued in multiple other industries and the largest positive pre-tax financial result of FDI companies were UAH 9.4 bn in agriculture. Hence, profits by FDI companies, across the board, appear smaller than those of non-FDI companies, but the heavy losses were concentrated in real estate and chemicals, possibly due to relatively isolated factors. It is also possible that round-trip capital may play a role here and losses may partly mask profit shifting to low-tax jurisdictions.

FDI companies also contributed 29% of social contributions paid by all companies in Ukraine, a total of UAH 21.5 bn in 2016. This is a higher than average amount of social contributions per employee, as FDI companies employed 20.4% of the total salaried workforce, but is roughly commensurate with the share of total labour costs faced by FDI companies, 32% of total labour costs, indicating higher average wages being paid in FDI companies.

Conclusion:

14,000 companies with FDI make up 4.6% of the number of companies in Ukraine, employ 1.1 million salaried workers and produced an annual GVA of UAH 425 bn. FDI companies in Ukraine are:

- Larger than average: FDI companies employ 5.3 as many employees as the average
- More productive: FDI companies produce 11 times as much GVA as the average
- More productive per employee: FDI companies produce 2.1 times as much GVA per employee as the average
- More productive per employee and capital stock: The Total Factor Productivity (TFP) of FDI companies is twice as large as on average.
- More likely to be generating losses. Only 53% of FDI companies ran at a profit in 2016, compared with an average of 73% of companies. FDI companies made up 8% of all loss-making companies in 2016 and generated 48% of aggregate corporate losses in Ukraine.

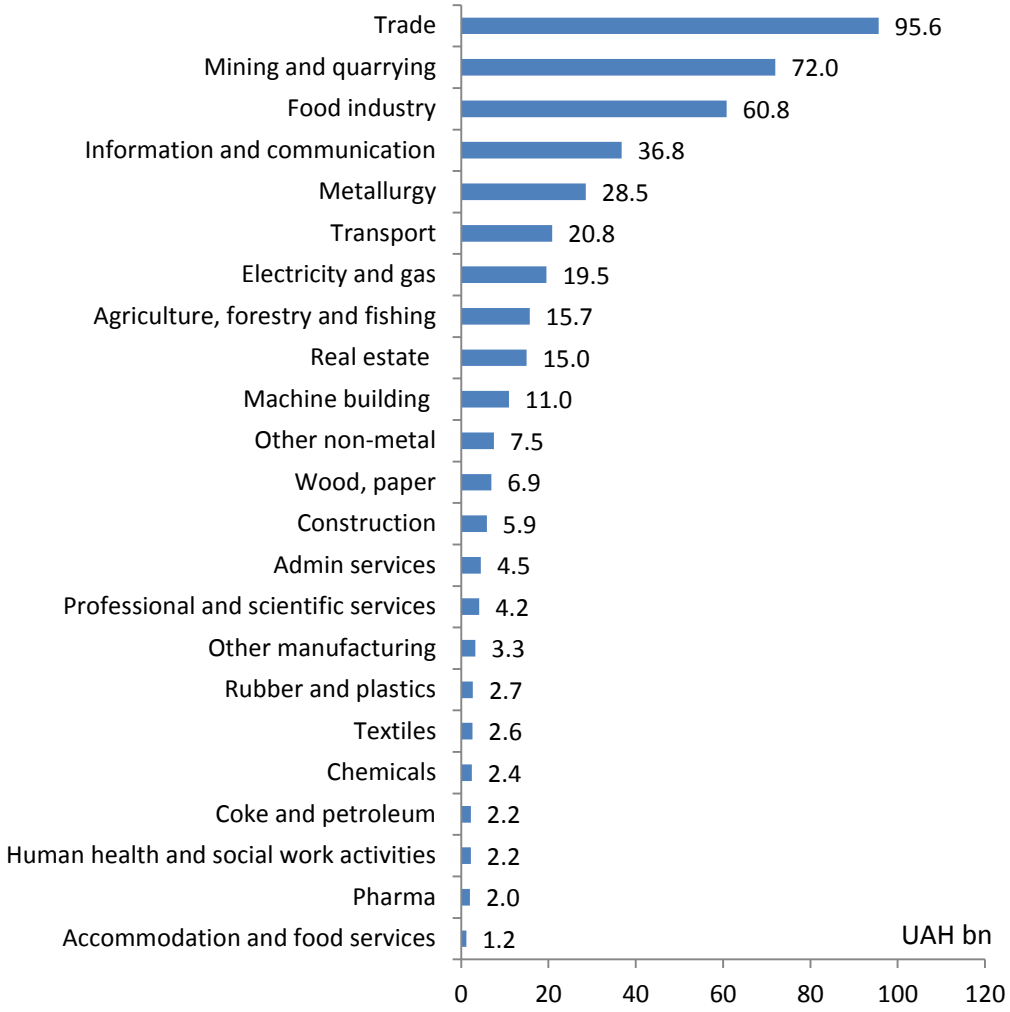
4.2 Impact of FDI on individual industries

While analysing the impact of FDI companies in the individual industries of Ukraine, we will first look at the relative importance of FDI companies in each industry – how much of industry GVA and employment is due to FDI companies before analysing the relative productivity differentials between FDI and domestically owned companies in each industry. As the data is exclusively for non-financial corporations, we exclude the financial sector from the analysis.

4.2.1 The relative importance of FDI companies in different industries

FDI companies produced most GVA overall in the trade sector. This reflects that, except the financial industry, trade holds the largest concentration of FDI stock among Ukraine's industries. Also, FDI companies produce large volumes in mining, the food industry and ICT, which also corresponds well with the concentrations of FDI stock analysed in chapter 3.4.

Figure 14: GVA produced by FDI companies by industry in 2016, UAH bn



Source: Ukrstat, own calculations

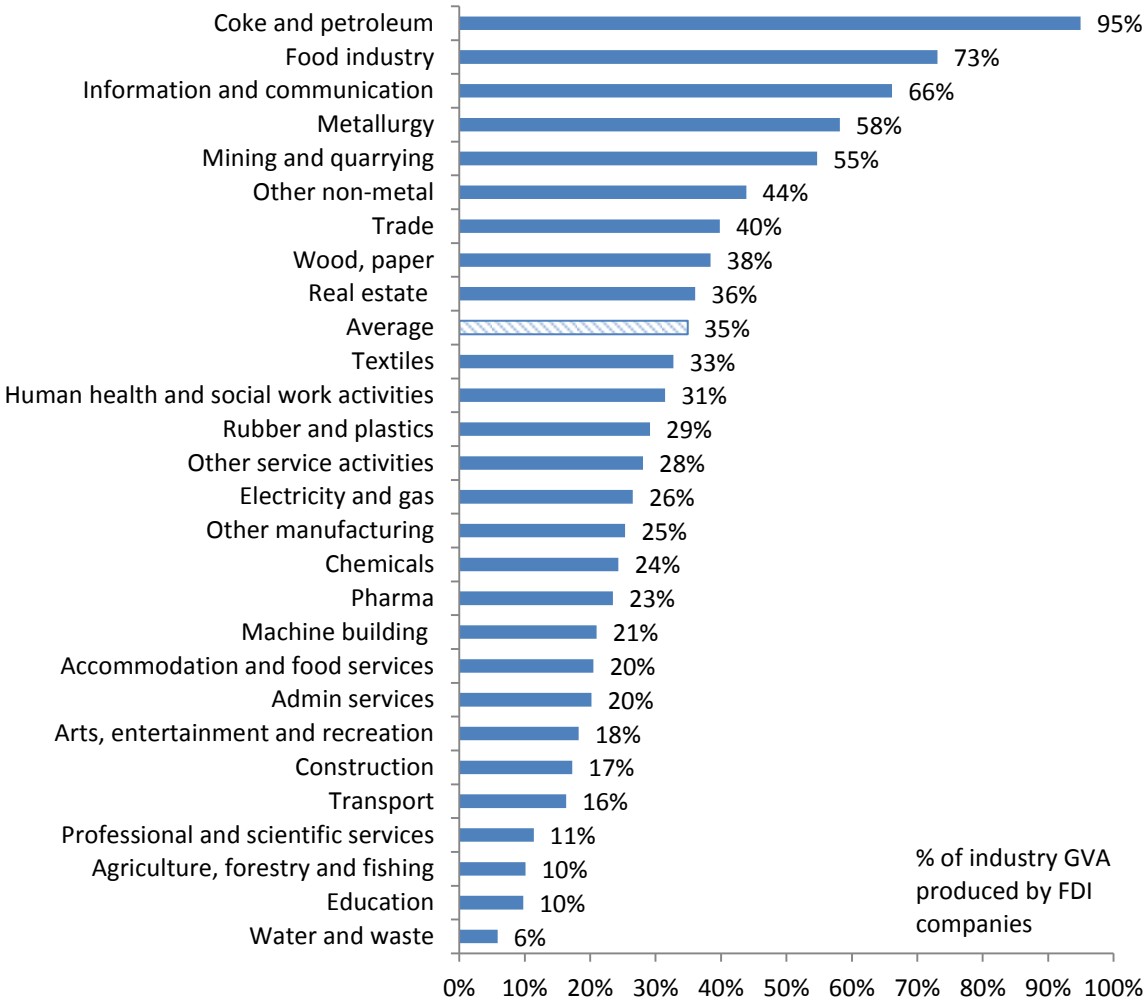
Note: Education, Water and Waste, other service activities, arts, entertainment and recreation have been omitted as FDI companies produced a GVA below UAH 1 bn in these industries

However, the GVA of FDI companies is concentrated in some industries. This concentration does not entirely reflect the importance of these sectors for Ukraine. For example, there is a significant GVA of UAH 15.7 bn produced by FDI companies in the agricultural sector. But this appears to be relatively small compared to the GVA of FDI companies in trade, mining or the food industry, considering that

agriculture is one of the most important sectors of Ukraine. Indeed, Figure 15 shows that the GVA share of FDI companies is very unevenly distributed across industries. Whereas FDI companies produce very large shares of GVA in the important food, ICT, metals and mining sectors, they only produce 10% of agricultural and 21% of machine building GVA. The extremely high 95% of GVA produced by FDI companies in the relatively small coke and petroleum industry should be interpreted with caution: Due to high reported losses of several non-FDI companies (partly exchange rate related losses), the GVA of non-FDI companies in this sector was extremely low in 2016. The value for our year of analysis may mainly reflect an atypical year. Furthermore, it appears highly likely that some of the largest FDI companies in this sector mainly or exclusively involve round-trip FDI. Hence, data in this sector appears not to permit a real analysis of FDI vs. non-FDI companies.

Considering the average GVA share of FDI companies of 34.9% across non-financial corporations in all industries, the GVA share of FDI companies is below average in many manufacturing industries, including machine building, chemicals, pharma and textiles. Indeed, only few very large concentrations in few industries are significantly above this average.

Figure 15: GVA of FDI companies, % of industry total, 2016

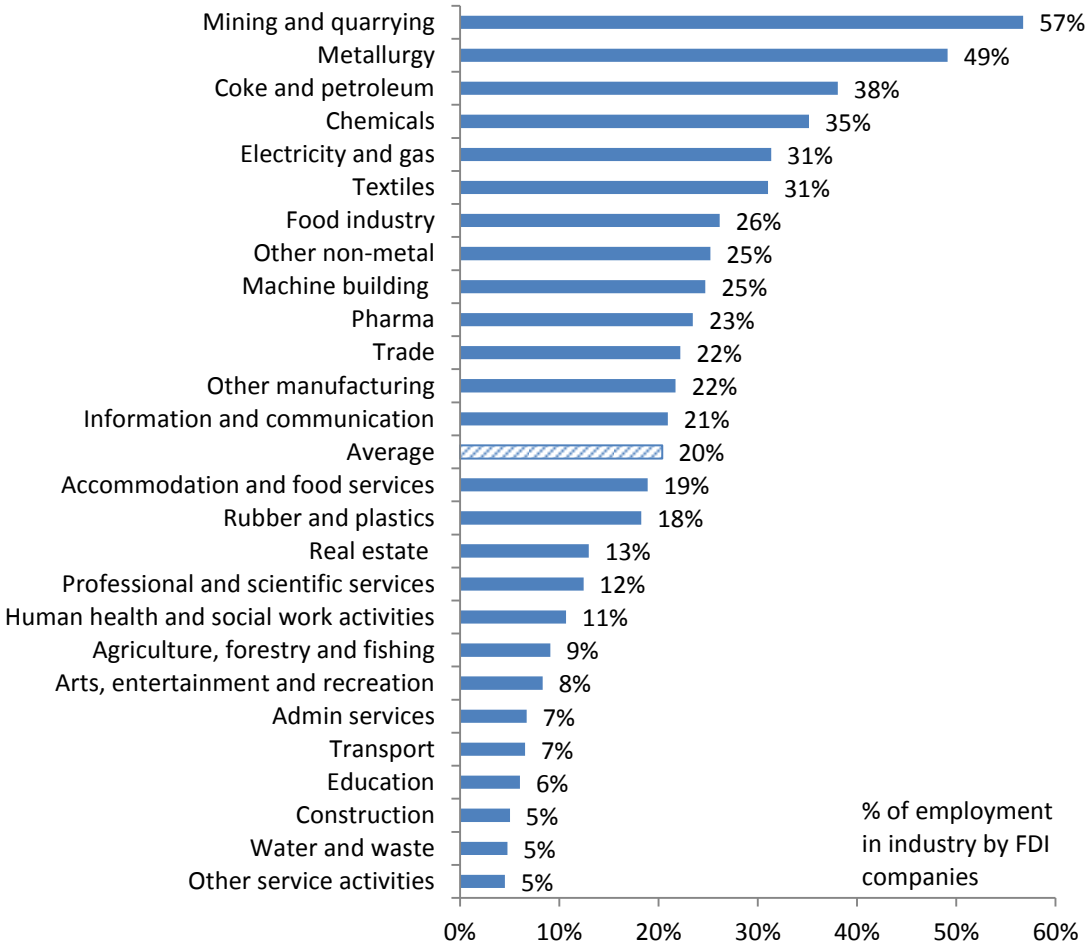


Source: Ukrstat, own calculations

Figure A2 in Annex A4 provides an alternative way of showing the uneven GVA distribution of FDI companies across industries, highlighting especially that among the important sectors of Ukraine, FDI companies are very important in trade, mining, the food industry and ICT and less important in agriculture or transport.

The shares of industry employment in FDI companies displayed in Figure 16 are not entirely in line with the relative importance of FDI companies in industry GVA, but related. Overall, the industry employment shares of FDI companies are largest in the mining and manufacturing industries, whereas the share of employment of FDI companies in the trade sector of 22% is significantly below the GVA share of FDI companies in that sector of 40%.

Figure 16: Employment by FDI companies, % of industry total, 2016



Source: Ukrstat, own calculations

The discrepancies between GVA and employment shares indicate differences in labour productivity that will be analysed in the next section. A larger GVA share than employment share of FDI companies in an industry indicates a higher labour productivity of FDI companies compared to non-FDI companies in the same industry.

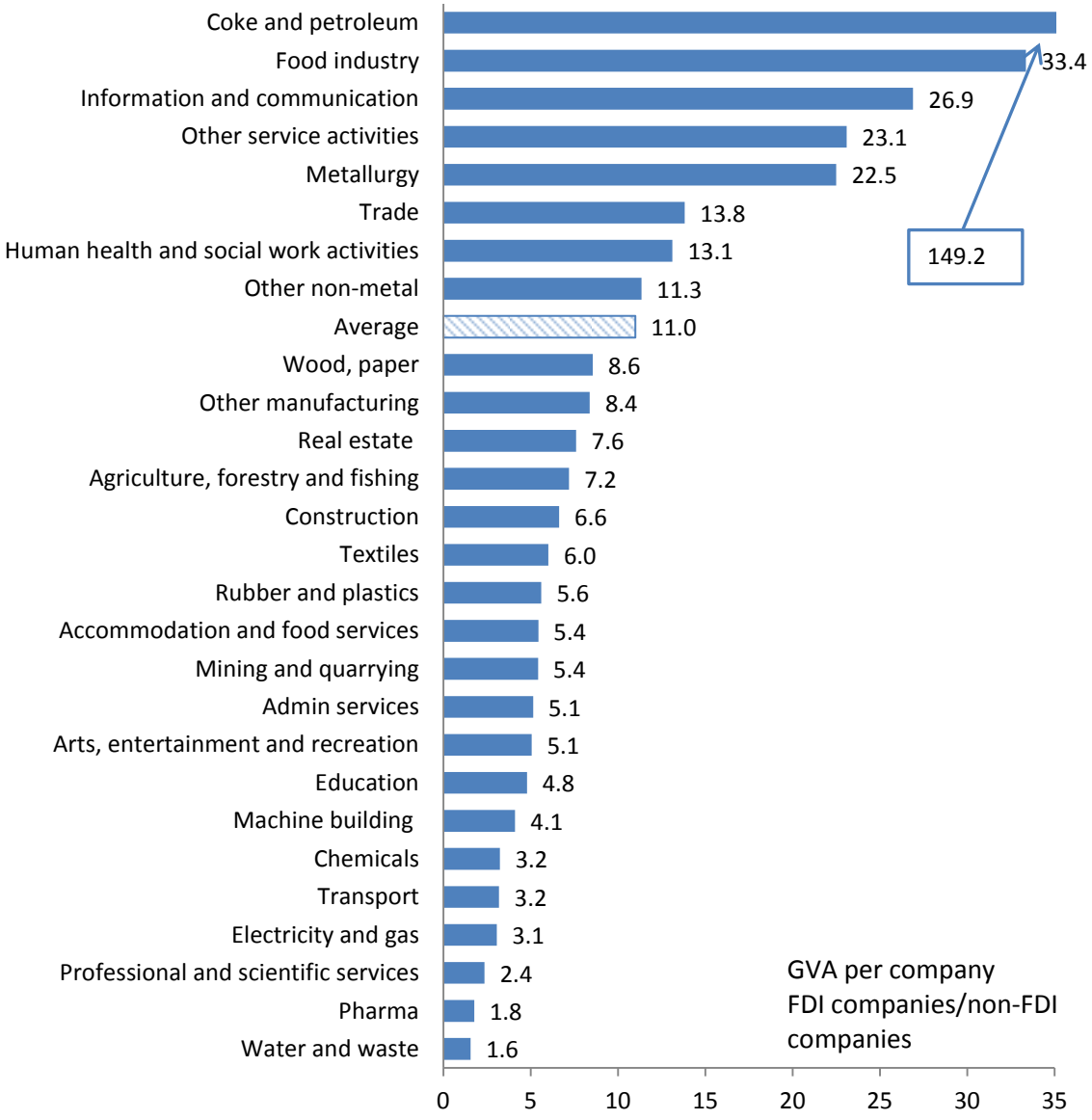
Conclusion:

- The GVA share of FDI companies is very unequally distributed across industries. FDI companies are concentrated in the mining and metals industries, the food industry, coke and petroleum, ICT and the trade sector.
- In other large sectors of Ukraine including agriculture, machine building and the transport industry, FDI companies play a relatively small role.
- Employment shares of FDI companies per industry broadly follow the GVA shares, but differences indicate varying labour productivity differentials between FDI and non-FDI companies in different sectors.

4.2.2 The productivity of FDI companies in different industries

Especially in the industries where the GVA share of FDI companies is very large, FDI companies also appear to be larger than non-FDI companies (hence exhibiting higher GVA per company than non-FDI companies). Large size differentials between FDI and non-FDI companies are also evident in the (more important) food industry, in ICT, metallurgy and trade. Among the larger industries with strong GVA shares of FDI companies, the size differentials is especially more limited in mining and quarrying. However, the average GVA per company in this sector is the largest for all sectors of Ukraine with UAH 109 m, hence domestic companies, too, tend to be very large in this industry. The coke and petroleum industry should be treated as an outlier with regard to exceedingly low GVA values of non-FDI companies and will not be explicitly discussed in the following analyses (see 4.2.1).

Figure 17: Performance ratio GVA/company of FDI vs. non-FDI companies, 2016

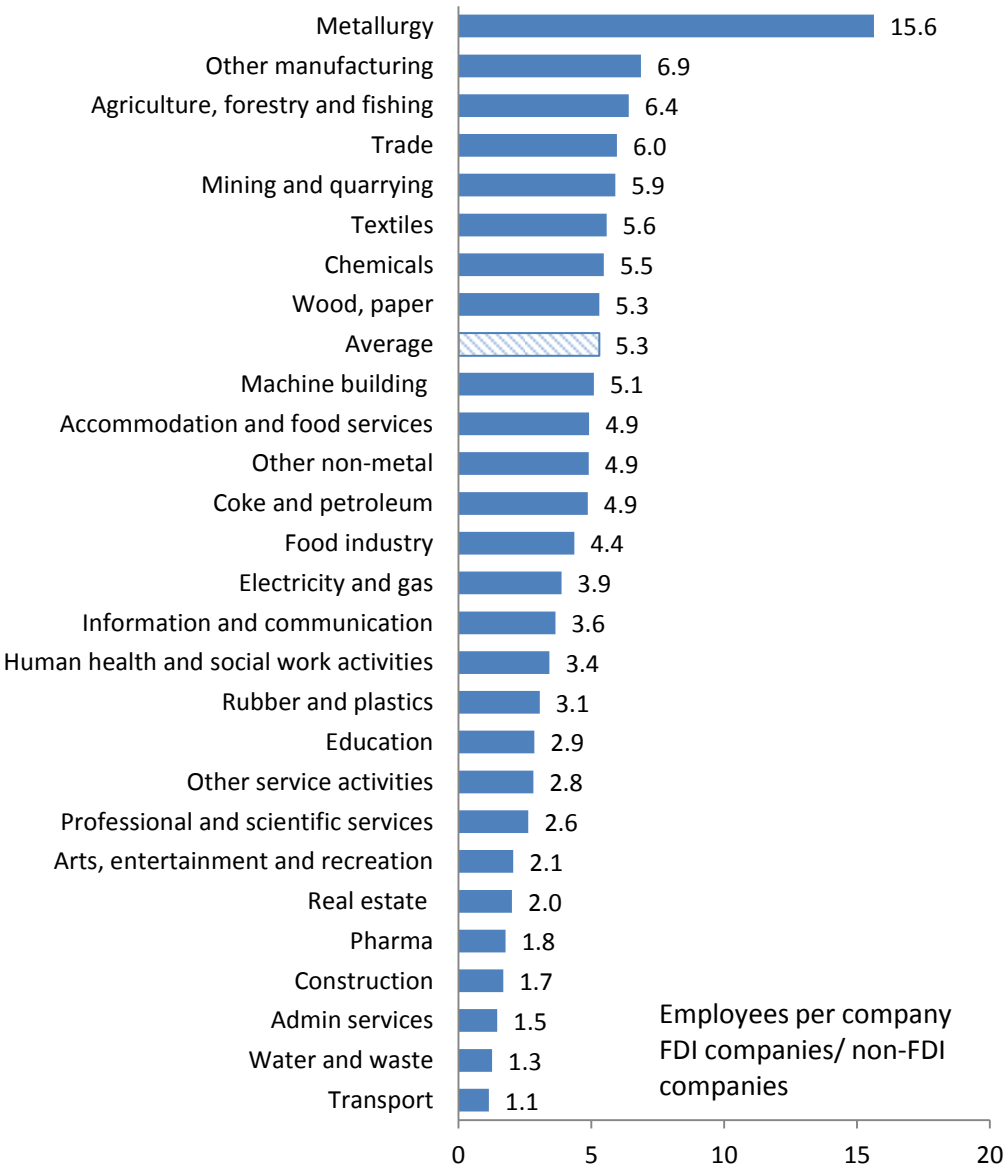


Source: Ukrstat, own calculations

The larger size – in terms of GVA per company – of FDI companies compared to their non-FDI counterparts is also reflected in a higher average number of employees per company. Here, the

metallurgy industry stands out, in which FDI companies employ on average 15.6 times more employees than non-FDI companies.

Figure 188: Performance ratio employees/company of FDI vs. non-FDI companies, 2016



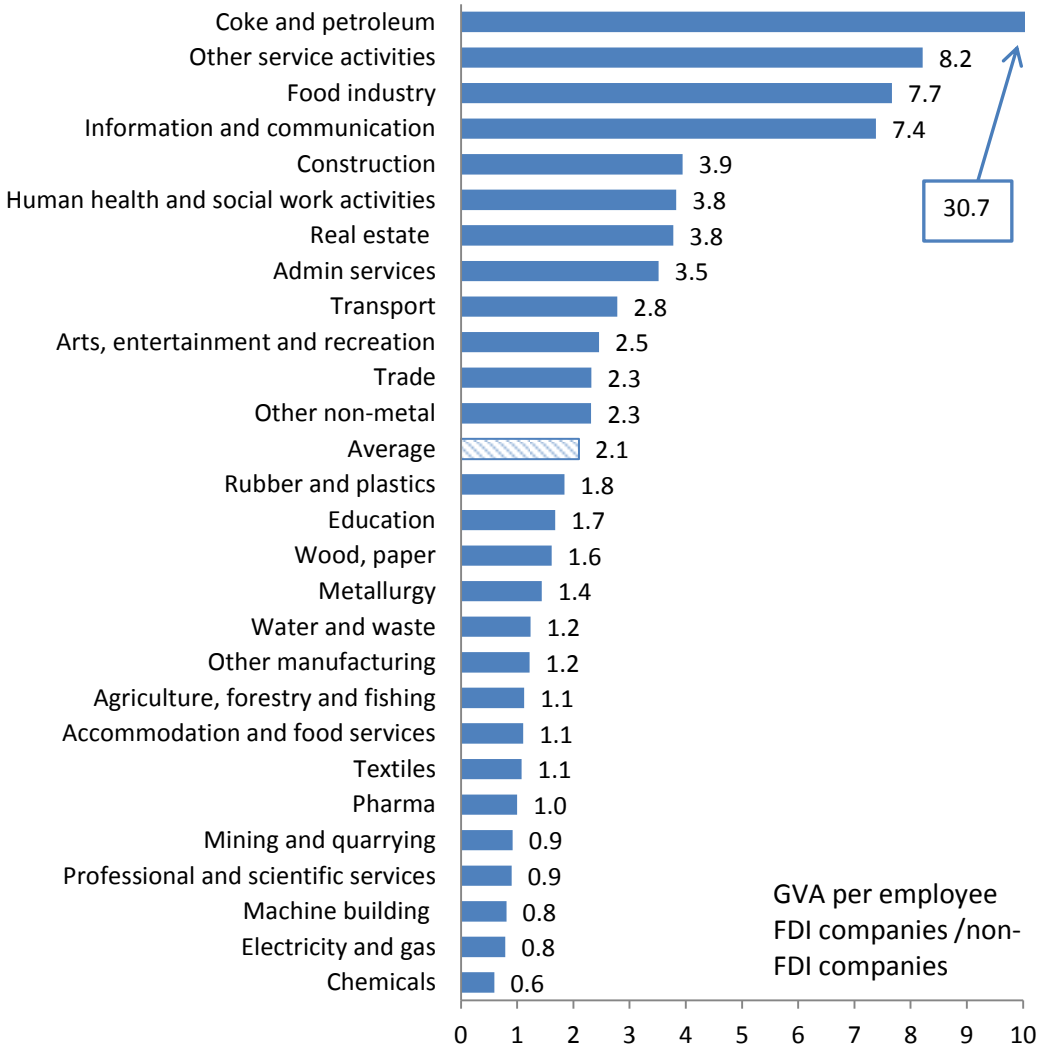
Source: Ukrstat, own calculations

However, it is also evident that the performance ratio in employment per company of FDI companies vs. non-FDI companies is lower than the performance ratio in terms of GVA per company. In metallurgy, the average FDI company employs 15.6 times more employees than the average non-FDI company, but produces 22.5 times more GVA. This differential seems to hold for most industries here. As stated previously, it indicates a higher average labour productivity of FDI companies, which apparently generate more output per employee.

Labour productivity measured as GVA per employee of FDI companies is higher than that of non-FDI companies in 21 of 27 analysed industries. The differential is in some smaller sectors (e.g. “other services”), but among the important industries, FDI companies produce 7.7 times more GVA per employee than non-FDI companies in the food industry and 7.4 times more in ICT. Other sectors exhibit more modest differentials. Of the large FDI sectors, labour productivity of FDI companies is

only 1.4 times higher in metallurgy and indeed below average in mining and quarrying, where it is only 0.9 times that of non-FDI companies.

Figure 19: Performance ratio GVA/employee of FDI vs. non-FDI companies, 2016

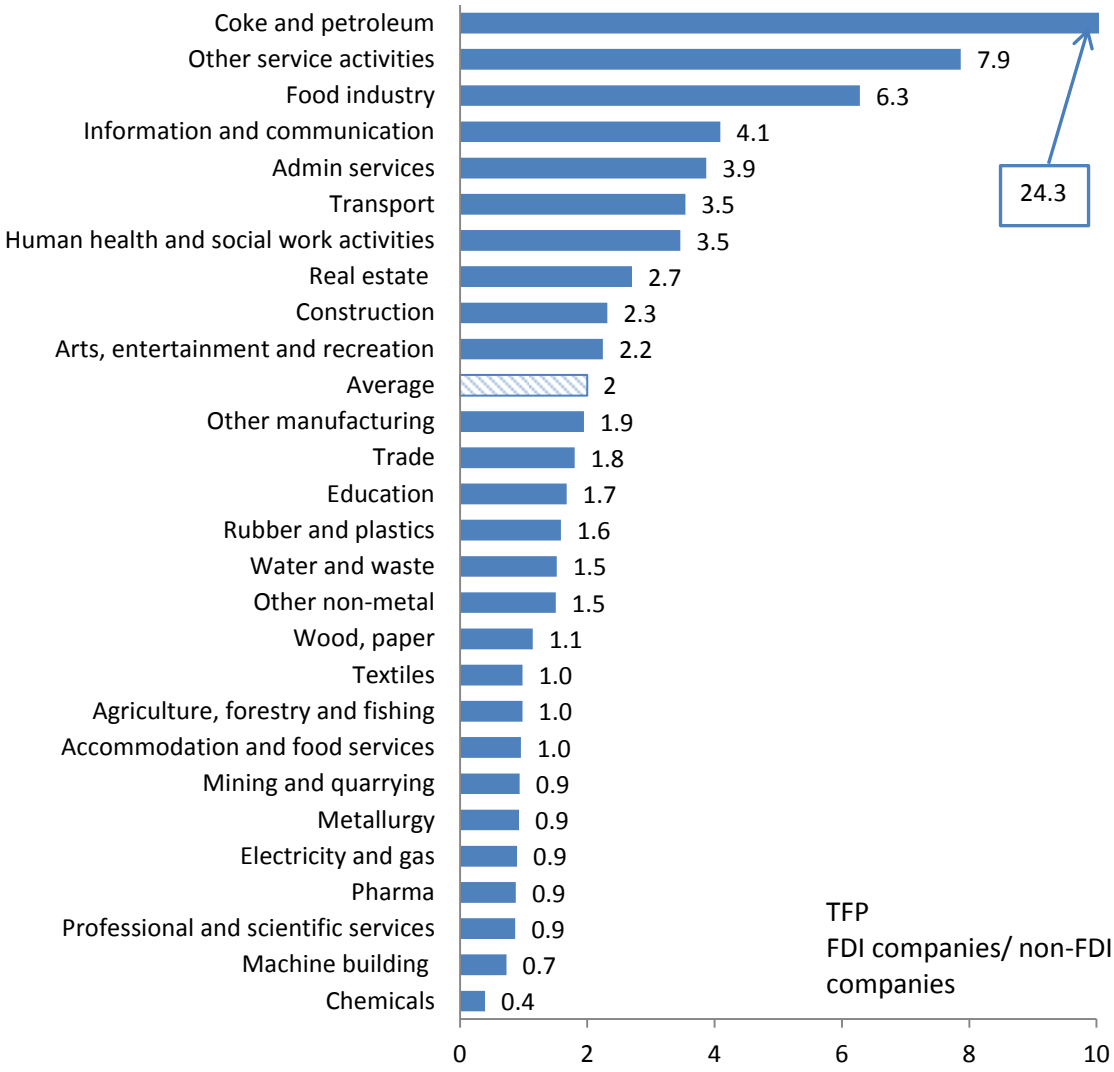


Source: Ukrstat, own calculations

Round-trip FDI may be a reason for the lack of productivity advantage of FDI companies in metallurgy: We know that significant FDI in the metal sector has come through Cyprus, where round-tripping FDI generally is expected to make up a large share of FDI. However, there is also large FDI in metallurgy from Germany and other countries which is known to originate from genuine FDI investors. Another explanation could be that, as metals production is a comparative strength of Ukraine, non-FDI companies simply are not at a know-how and management disadvantage compared to international companies in these sectors.

When finally looking at the differentials between FDI and non-FDI companies in total factor productivity (TFP), the productivity advantage of FDI companies in ICT and food production is confirmed, whereas again in the heavy industries of metallurgy, mining, machine building and in agriculture, again, the TFP of FDI companies is the same or smaller as that of non-FDI companies. There are also smaller positive productivity differentials for a range of further sectors with significant FDI, including trade, real estate, transport and construction.

Figure 20: Performance ratio TFP of FDI vs. non-FDI companies, 2016



Source: Ukrstat, own calculations

Among the important sectors with large shares of FDI companies in GVA, a clear pattern in productivity differentials has emerged. Across the board, FDI companies are larger in GVA and employment per company than non-FDI companies. This will be due to a combination of better access to capital and investment of FDI companies and a selection effect: FDI will generally rather flow into larger companies. However, FDI companies do not enjoy a productivity advantage in all sectors. FDI companies in the food industry and ICT enjoy clear productivity advantages over non-FDI companies. On the other hand, in the heavy industries (metals, mining, machine building) and agriculture, FDI companies appear not to enjoy a productivity advantage over non-FDI companies.

Conclusion:

- FDI companies in all industries are on average larger than non-FDI companies with regard to GVA and employment per company.
- FDI companies in the food and ICT industries enjoy strong labour and total factor productivity advantages over non-FDI companies.
- However, especially in the heavy industries and agriculture, FDI companies are no more or even less productive than non-FDI companies.

5. Conclusions

Although the inward FDI stock of Ukraine has declined substantially since 2013 due to the currency depreciation and economic crisis, our analysis demonstrates that FDI companies contribute strongly to Ukraine's economy. Among non-financial corporations, FDI companies make up only 4.6% of companies, but employ 20.4% of employees and produce 34.9% of total GVA. FDI companies are significantly larger than non-FDI companies. On average, FDI companies produce 11 times more GVA per company and employ 5.3 times more employees than non-FDI companies. They are also more productive: Their labour productivity (GVA per employee) is on average 2.1 times higher and their total factor productivity is twice higher than that of non-FDI companies. This allows them to pay higher wages to their employees.

The FDI stock is concentrated especially in finance, trade, real estate and the food industry. However, the GVA share of FDI companies per industry is very unequally distributed in the non-financial sector. FDI companies make up large shares of industry GVA in the mining and metals industries, the food industry, coke and petroleum, ICT and the trade sector, but in other large sectors of Ukraine including agriculture, machine building and the transport industry, FDI companies play a relatively small role.

However, among the industries with large FDI concentrations, positive productivity differentials – higher labour and total factor productivity of FDI companies – exist not in all sectors. In the food industry and ICT, large positive productivity differentials exist that strongly drive the positive productivity differential of FDI companies in the aggregate economy.

However, no or negative productivity differentials exist in the heavy industries (metals, mining, machine building) and agriculture. Smaller, but positive productivity differentials can be found, among other industries, in trade, real estate, transport and construction.

Annex

A1: Why is FDI important for transition economies?[5]

Foreign direct investment is quite diverse: The foreign investor may acquire an existing domestic firm (brownfield investment) or establish a new firm (greenfield investment). The investor may focus on serving the market of the host country (horizontal investment) or on integrating local operations into international value chains (vertical investment). Conditions also vary across sectors, from the exploitation of non-renewable resources to wholesale and retail trade.

Yet in all these situations, the foreign firm enters into a close relationship with a domestic firm and exerts some measure of control over it. Because of the associated cost to the foreign firm, it is plausible that it will only do so if it plans to invest so much in this long-term relationship that the additional level of control is required to protect the investment. Such investment in the relationship may involve the transfer of technology, sharing of proprietary knowledge about business strategy, or the establishment of marketing channels.

Against this background, a large empirical research literature asks how FDI affects the performance of domestic firms, especially when the investor is based in an advanced economy and the investment is in a developing or transition economy. While it is immediately plausible that foreign-owned firms often benefit from transfers of technology and knowledge, empirical studies have also found spillovers to locally owned firms – for instance, through forward or backward linkages (purchases from or sales to locally owned firms) or through shared labour markets with locally owned firms (Box 2).

Possible social benefits from FDI through higher productivity carry an important policy implication. Very often, foreign investors are not rewarded through higher profits for the social benefits that they bring along. Rather, they may face extra costs if they invest in a developing or transition economy that is unfamiliar to them, especially if they are the first foreign investors to do so – either in the host country or in their particular sector. As a result, the host country may receive less foreign direct investment – and fewer of the associated social benefits – than would be optimal. This is an economic justification for carefully targeted government support to compensate foreign investors for their extra costs and associated social benefits. Such support would be additional to the host government's important role in maintaining a supportive business environment for all firms, both domestically and foreign-owned.

When FDI inflows are large enough relative to GDP, they may have important macroeconomic consequences. As direct investors are interested in a long-term relationship with a domestic firm, there is a presumption that FDI is less volatile than other sources of external finance (foreign currency earnings) such as portfolio investment and international loans. This presumption was borne out in the financial crises in Asia and Russia during the late 1990s when investors withdrew short-term capital following a loss of confidence in the economic prospects of the host countries. While current FDI inflows may also fall during a crisis, investors are less likely to attempt to withdraw the existing FDI stock.

[5] *Note: This section was originally written for a Policy Study of the German Economic Team Moldova, PS/01/2017: "The economic impact of FDI in Moldova - Results from an empirical analysis", Authors: Woldemar Walter, Matthias Lücke, Adrian Lupusor*

One upshot of this argument is that a current account deficit may be sustainable to the extent that it is financed through FDI inflows, whereas a similar deficit financed through government or corporate debt or portfolio investment would be more problematic.

Box A1: Impact of FDI on the economy of Poland

FDI had a crucial contribution to the modernisation of Poland's economy[6], which set the basis for what many call "Poland's economic miracle[7]". During the last 20 years, it managed to attract over USD 240 bn net inflows of FDI[8], placing it the second top performer among its neighbors[9] in this regard (the first one is Germany). During the same period of time, it boosted its GDP per capita[10] by 2.2 times, allowing it to converge to the average level among its neighbors[11]. Moreover, Poland was the single country in Europe that did not experience recession during the international financial and economic turmoil of 2007-2009.

The main beneficiaries of the FDI inflows were companies from wholesale and retail trade, industrial and financial sectors[12]. These are sectors that usually generate relatively high value-added for the economy.

The benefits of FDI for the Polish economy are related also to increased efficiency and competitiveness of firms. According to estimations, firms that passed into foreign ownership began to grow faster – they increased added value at an annual rate of 2.2 percentage points greater than other companies[13]. Moreover, the FDI has strong intra-industry effects, as the benefits spread not only across firms that were taken over by foreign investors, but also across contractors, customers and suppliers[14]. This is explained by the fact that FDI came with important innovations in product, technology, management and marketing with strong positive spillover effects for the entire economy.

Also, FDI had a major role for boosting labor productivity. It is estimated[15] an average 0.2% increase in gross-value added per employee due to FDI inflows. It set the basis for higher wages and more decent jobs that induced a higher well-being for the population. Particularly, the net effect of FDI on

[6] "The Impact of Foreign Direct Investment: Contribution to the Policy economy in the past quarter century", Polityka Insight, 2017

[7] http://www.accaglobal.com/uk/en/member/member/accounting-business/2017/06/insights/poland-miracle.html

[8] USD 240.6 bn Foreign direct investment (net inflows (BoP, current USD)), during 1996-2016. Source: World Bank.

[9] Ukraine, Belarus, Slovak Republic, Czech Republic, Lithuania and Germany.

[10] PPP (constant 2011 international Dollar). Source: World Bank.

[11] From 81.6% in 1996 to 99.6%.

[12] "The Impact of Foreign Direct Investment: Contribution to the Policy economy in the past quarter century", Polityka Insight, 2017

[13] Marcin Kolasa, „How does FDI inflow affect productivity of domestic firms? The role of horizontal and vertical spillovers, absorptive capacity and competition," NBP Working Paper, no. 42, 2007.

[14] Nuno Crespo and Maria Paula Fontoura, „Determinant Factors of FDI Spillovers – What Do We Really Know?", World Development, vol. 35, no. 3, pp. 410-425, 2007.

[15] "The Impact of Foreign Direct Investment: Contribution to the Policy economy in the past quarter century", Polityka Insight, 2017.

wages was estimated at 9-10% - the wages would have been lower without FDI. Importantly, the FDI did not only improve the *levels* of incomes of the population, but also their *distribution:* income inequality, measured by the Gini coefficient, would have been by 5% higher without FDI.

Last, but not least, the positive impact of FDI on the production of firms and incomes of the population, translated into larger tax base for the Government: there has been a 10-12 per cent increase in the tax base in the long term thanks to the inflow of FDI[16]. It reinforces the virtuous circle between FDI and economic growth, as more FDI lead to more revenues into the state budget, allowing the Government to invest more in infrastructure, attracting even more FDI.

While FDI is one important type of long-term relationship between foreign and domestic firms that may increase the productivity of domestic firms, it is not the only one. Other types of long-term inter-firm relationships may have similar effects, although they are sometimes more difficult to identify in available data. For example, foreign firms that use outward processing often provide their partners not only with raw materials (as required for outward processing). They may also provide product designs, quality control, production machinery, or financing; they will naturally handle the marketing of the processed final product. While outward processing can be identified in international trade statistics, it is not as apparent from firm-level data as foreign ownership.

Other long-term relationships such as long-term purchase contracts are even less obvious, but may still improve firm performance. Over time, such close, long-term inter-firm relationships and the associated transfers of technological and business knowhow have helped many firms in developing and transition economies to emerge from an exclusive focus on processing operations to take on higher-value-added activities. Many policies that promote FDI by reducing international communication and other transaction costs also facilitate other long-term, international inter-firm relationships. When designing policies, policy-makers may want to bear in mind such wider effects.

Box A2. The impact of FDI on the performance of domestic firms – research findings

There is a large empirical research literature on the effects and determinants of FDI in developing and transition economies. In this box, we discuss three strands of this literature that are especially relevant to understanding the possible contribution of FDI to structural transformation in transition economies and to the design of supportive policies. First, how does inward FDI affect the productivity of domestic firms? Second, how do foreign-owned firms affect the host country's exports and imports? And third, what drives inward FDI in transition economies in a cross-country perspective? As a large amount of research has been conducted on these issues, we concentrate on recent, high-quality contributions, especially survey articles.

FDI and the productivity of host country firms

Foreign-owned firms typically pay substantially higher wages than domestic firm (Javorcik, 2015). This finding applies across many countries, sectors, and time periods. While there are many possible explanations, the most likely is that labour productivity in foreign-owned firms is higher. It has also been pointed out that foreign firms may be unfamiliar with the local labour market and therefore end up paying higher wages, or economic rents may be shared throughout a multinational enterprise, with local workers also benefiting.

If labour productivity (measured as output per worker) is indeed higher in foreign-owned firms, there

[16] Idem

are, again, several possible explanations that are not mutually exclusive. Foreign-owned firms may be more capital-intensive or they may require higher skills, possibly unobservable, from their workers. Most importantly for our purposes, many empirical studies find that foreign ownership tends to lead to higher total factor productivity (TFP) in host country firms. In this context, total factor productivity may be interpreted as a measure of technological progress. There is also evidence that some multinational firms provide more training to their workers and transfer technology in-house between parent and affiliate companies. In fact, passing on and protecting proprietary technological knowledge is one motive provide for setting up an affiliate, rather than cooperating with independent firms.

Often, technological advances and TFP growth are not limited to foreign-owned firms. Many studies have found spillovers of new technological knowledge to other host country firms through a variety of channels (Javorcik, 2008; Keller, 2010). Backward linkages (i.e. foreign-owned firms transferring new technological knowledge to their domestic suppliers) seem to be a particularly effective channel (Gorodnichenko et al., 2014; Hanousek et al., 2011). Backward linkages may operate not only within the manufacturing sector, but also when foreign investors in the retail sector support their domestic suppliers in modernizing their products and production processes (Iacovone et al., 2011). Based on her review of this literature, Javorcik (2008) discusses how spillovers may justify carefully targeted policy interventions to promote foreign direct investment.

FDI and international trade at the firm level

The relationship between FDI and host country exports and imports depends crucially on the type of FDI (for a detailed discussion see Helpman, 2006). When firms decide how to serve a foreign market, they choose between exporting to the partner country directly or investing in the partner country to produce for the local market ("horizontal FDI"). To the extent that a foreign-owned firm targets the domestic market, it does not export its output, but it may import intermediate products that replace earlier imports of the final product.

By contrast, vertical FDI seeks to benefit from the host country's comparative advantages and integrates operations in the host country into a multinational firm's international production chains. A large share of output is typically exported; intermediate products are often imported. As a result, the host country becomes more intensely integrated into the international division of labour. Of course, higher exports are not an end in themselves. However, better access to export markets should clearly benefit developing and transition economies as they diversify and grow.

Determinants of FDI in developing and transition countries

A large literature addresses the determinants of FDI from a cross-country perspective. One concern is whether host countries might out-compete one another in terms of their policy interventions to attract FDI, particularly when they offer tax incentives and other subsidies to foreign investors. A race to the bottom might result, with hollowed-out government finances and low-quality government services, while total FDI to all countries together might not be much higher than in the absence of subsidies.

Empirical research findings generally do not bear out these concerns. By definition, foreign direct investors maintain physical operations in the host country. Thus their profitability depends not only on tax rates, but also on the quality of the local infrastructure, how well workers are educated, the efficient working of the public administration, etc. Therefore, investors tend to consider the whole package of taxes and public services and the cost of doing business more generally, in addition to other economic variables in line with Dunning's OLI model (ownership, localisation, internalisation; Dunning, 1988).

For example, Demekas et al. (2007) study FDI in Central and South-Eastern Europe and find that "gravity" factors (host market size and geographical and cultural proximity between source and host country) dominate the allocation of FDI across countries. Other government policies play a more limited role: High corporate taxes discourage FDI, whereas an efficient infrastructure encourages FDI. Overesch and Wamser (2010) also find that company taxes in EU accession countries had only a relatively small effect on German FDI to the region. Kinda (2010) finds that a low-quality business environment reduces FDI in a wide range of developing countries. Based on these and many other studies, it is safe to conclude that host countries that seek to attract foreign direct investment should not focus on cutting tax rates, but should rather use their tax revenues wisely to provide high-quality public services and a good business environment.

A2: Structural survey variables

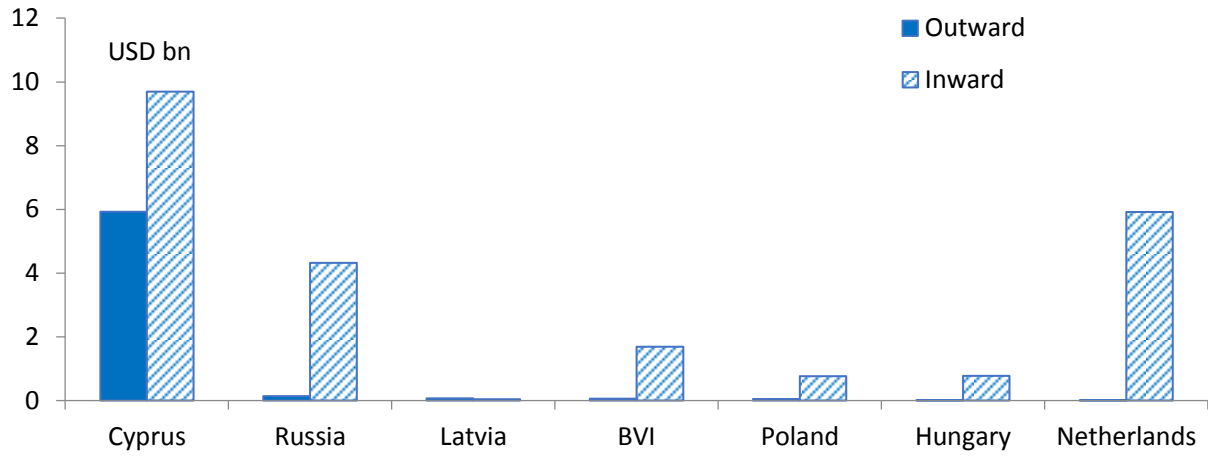
Table A1: Variables in structural company data

Structural information	NACE code
	Number of companies
	Number of employees
Financial data	Sales (ex-VAT)
	Costs of goods sold
	Production for own investment use
	Material costs
	Labour costs
	Social contributions
	Taxes and duties linked to production
	Fixed assets remaining value
	Amortization of fixed assets
	Financial result (pre-tax)
	Profit of profitable companies
	Losses of loss-making companies
	Share of profitable companies
Inventories	Unfinished products starting stock
	Unfinished products ending stock
	Finished products starting stock
	Unfinished products ending stock
	Resale products starting stock
	Resale products ending stock
	Cost of products bought for resale

Source: Own display

A3: Comparison of inward and outward FDI stock of Ukraine

Figure A1: Inward and outward FDI stock of Ukraine, 2016



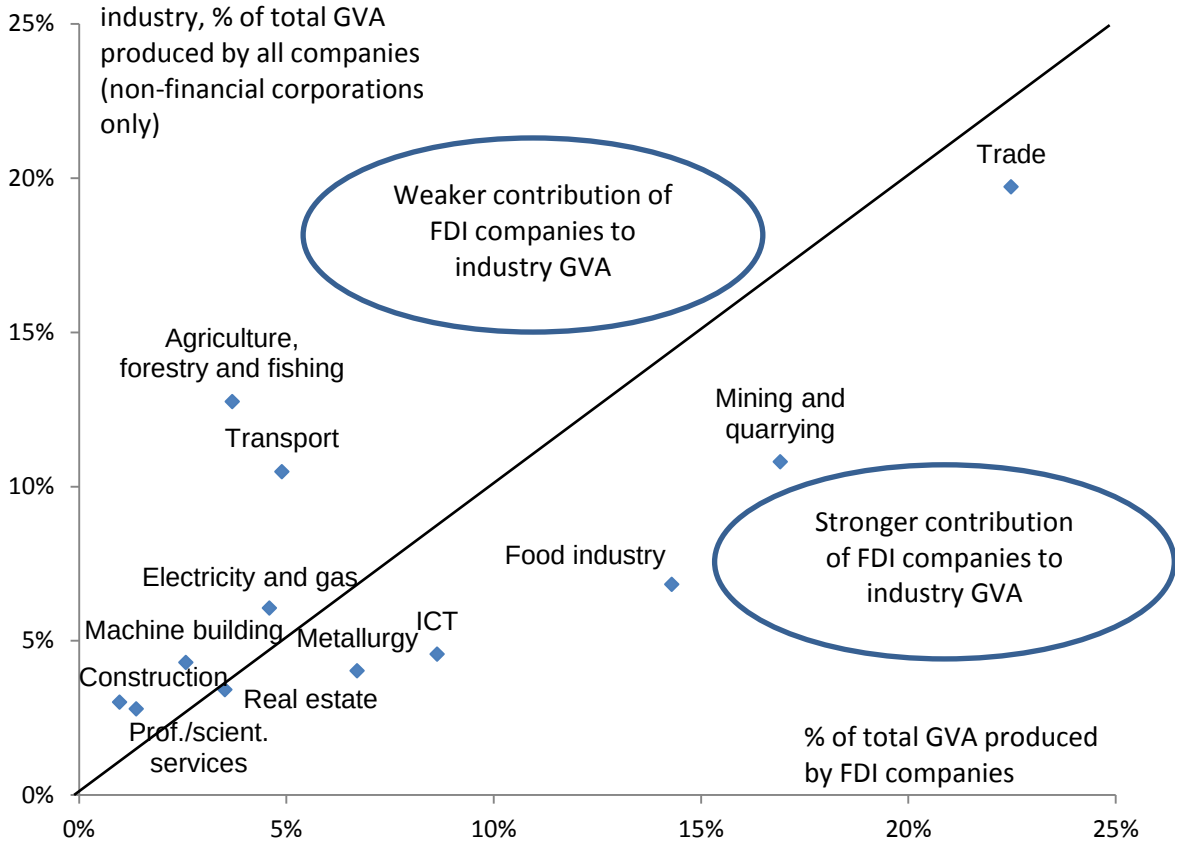
Source: Ukrstat
Note: End of year data, equity FDI only

Using data on the *outward* FDI stock from Ukraine can help reinforce expert judgements about which source countries of FDI may be particularly affected by round-trip FDI. However, outward FDI should not be confused with round-trip FDI: It is in fact quite unlikely that a significant portion of round-trip FDI stems from officially reported outward FDI, as the purpose of round-tripping often is to mask the true origin of the capital. Rather, seeing where Ukrainian outward FDI operations went to may provide an indication of which financial hubs Ukrainian companies and businesspeople generally prefer for organising their international investments.

Clearly, Cyprus has a large lead in the destination countries of Ukrainian outward FDI. Of the total of USD 6.35 bn of Ukrainian outward FDI, USD 5.93 bn was invested in Cyprus by the end of 2016. This reinforces the expert judgement that especially FDI inflows from Cyprus may contain a particularly high share of round trip FDI. However, almost all of the registered outward FDI to Cyprus stems from one single operation in the fourth quarter of 2007, originating in Donetsk oblast. Hence, this data is imperfect at best and should at most be interpreted as supplementary, indicative evidence.

A4: Comparison of GVA contributions of FDI companies with sector sizes

Figure A2: GVA contributions of FDI companies vs. industry share of total GVA, 2016



Source: Ukrstat, own calculations

Figure A2 supports the conclusions arrived at in section 4.2 around the analysis of Figure 16. It shows that the shares of each industry of total GVA produced by FDI companies (horizontal axis) do not fully correspond to the shares of the industry in total GVA produced (vertical axis). If in each industry, FDI companies made up the same share of industry GVA, all industries would be on the 45 degree line. The scattered nature of industries shows that in industries in the bottom right half of the graph, FDI companies more strongly contribute to industry GVA and in industries in the upper left hand half of the graph, FDI companies produce a lower than average share of industry GVA.

A5: Structural data for FDI companies and all companies in industry, non-financial sector, 2016

Table A2: Key structural data for all companies (FDI and non-FDI) by industry, 2016

	NACE code	No. of companies	No. of employees	Employees / company	GVA	GVA / company	GVA/ employee	TFP
ALL companies in the sector		units	units	units	UAH m	UAH 1000	UAH	
Agriculture, forestry, fishing	A	44,998	583,400	13	155,348	3,452	266,280	0.403
Mining and quarrying	B	1,209	287,400	238	131,613	108,861	457,944	0.515
Manufacturing	C	32,435	1,422,300	44	270,795	8,349	190,392	0.268
Food industry	10+11+12	5,104	312,500	61	83,220	16,305	266,305	0.383
Textiles	13+14+15	2,341	84,400	36	7,863	3,359	93,169	0.213
Wood, paper	16+17+18	5,049	85,800	17	17,956	3,556	209,277	0.319
Coke and petroleum	19	98	25,600	261	2,326	23,731	90,844	0.115
Chemicals	20	1,264	68,300	54	10,008	7,918	146,527	0.216
Pharma	21	196	24,100	123	8,654	44,155	359,105	0.498
Rubber and plastics	22	1,876	45,900	24	9,277	4,945	202,114	0.302
Other non-metal	23	2,531	81,600	32	17,210	6,800	210,911	0.300

Metallurgy	24+25	3,539	232,700	66	49,050	13,860	210,786	0.229
Machine building	26-30	4,209	352,600	84	52,357	12,439	148,489	0.267
Other manufacturing	31+32+33	6,228	108,800	17	12,873	2,067	118,317	0.169
Electricity and gas	D	1,630	329,700	202	73,776	45,261	223,767	0.228
Water and waste	E	1,652	44,500	27	7,888	4,775	177,258	0.242
Construction	F	24,333	241,700	10	33,972	1,396	140,554	0.239
Trade	G	82,192	912,800	11	240,154	2,922	263,096	0.475
Transport	H	13,716	762,200	56	127,702	9,310	167,544	0.158
Accommodation and food services	I	6,544	88,700	14	5,755	879	64,882	0.108
Information and communication	J	11,932	154,200	13	55,566	4,657	360,350	0.490
Real estate	L	30,913	156,000	5	41,537	1,344	266,263	0.250
Professional and scientific services	M	24,853	189,200	8	36,676	1,476	193,848	0.376
Admin services	N	13,801	239,000	17	22,412	1,624	93,774	0.096
Education	P	1,855	18,000	10	1,374	741	76,333	0.155
Human health and social work activities	Q	3,936	88,000	22	6,996	1,777	79,500	0.168

Arts, entertainment and recreation	R	1,705	27,500	16	4,426	2,596	160,945	0.180
Other service activities	S,T	3,250	20,400	6	2,332	718	114,314	0.219
Total non-financial	A-T excl. K	300,954	5,565,000	18	1,218,322	4,048	218,926	0.271

Source: Ukrstat, own calculations

Table A3: Key structural data for FDI companies by industry, 2016

	NACE code	No. of companies	No. of employees	Employees / company	GVA	GVA / company	GVA/ employee	TFP
FDI companies		units	units	units	UAH m	UAH 1000	UAH	
Agriculture, forestry and fishing	A	693	53,115	77	15716	22678	295,880	0.397
Mining and quarrying	B	220	163,082	741	71961	327095	441,257	0.500
Manufacturing	C	2050	425,333	207	129866	63349	305,328	0.357
Food industry	10+11+12	384	81,726	213	60820	158386	744,195	0.936
Textiles	13+14+15	175	26,196	150	2573	14705	98,236	0.212
Wood, paper	16+17+18	343	23,920	70	6898	20110	288,367	0.358
Coke and petroleum	19	11	9,745	886	2209	200776	226,633	0.253
Chemicals	20	114	24,012	211	2434	21349	101,358	0.123
Pharma	21	29	5,656	195	2032	70078	359,310	0.453
Rubber and plastics	22	128	8,385	66	2704	21121	322,426	0.429
Other non-metal	23	163	20,582	126	7548	46306	366,723	0.405
Metallurgy	24+25	206	114,338	555	28532	138504	249,538	0.234

Machine building	26-30	255	87,144	342	10978	43051	125,975	0.210
Other manufacturing	31+32+33	242	23,629	98	3260	13471	137,966	0.297
Electricity and gas	D	172	103,356	601	19549	113658	189,144	0.211
Water and waste	E	63	2,124	34	461	7320	217,109	0.361
Construction	F	742	12,156	16	5869	7909	482,768	0.515
Trade	G	3754	202,566	54	95635	25476	472,118	0.716
Transport	H	789	49,899	63	20836	26408	417,556	0.496
Accommodation and food services	I	296	16,762	57	1179	3984	70,362	0.105
Information and communication	J	808	32,272	40	36758	45492	1,138,996	1.101
Real estate	L	2133	20,265	10	14982	7024	739,310	0.533
Professional and scientific services	M	1278	23,553	18	4169	3262	177,002	0.332
Admin services	N	648	16,048	25	4529	6989	282,197	0.318
Education	P	41	1,090	27	134	3272	123,070	0.249
Human health and social work activities	Q	133	9,409	71	2200	16542	233,828	0.451

Arts, entertainment and recreation	R	72	2,292	32	808	11226	352,661	0.364
Other service activities	S,T	54	925	17	655	12123	707,735	1.303
Total non-financial	A-T excl. K	13,946	1,134,247	81	425,427	30505	375,074	0.442

Source: Ukrstat, own calculations

Table A4: Financial and further data for all companies (FDI and non-FDI) by industry, 2016

	NACE code	Labour costs	Social contri-butions	Financial result (pre-tax)	Profit of profitable companies	Losses of loss-making companies	Share of profitable companies	Share of loss making companies	Fixed assets remaining value	Fixed assets per company
ALL companies in the sector		UAH m	UAH m	UAH m	UAH m	UAH m	%	%	UAH m	UAH 1000
Agriculture, forestry and fishing	A	27,094	5,900	91,110	103,942	12,833	88	12	146,364	3,253
Mining and quarrying	B	25,023	7,005	23,456	49,253	25,797	59	42	194,905	161,212
Manufacturing	C	95,619	20,217	-27,229	78,097	105,326	75	25	455,575	14,046
Food industry	10+11+12	19,070	3,864	-5,965	18,151	24,117	71	29	93,388	18,297
Textiles	13+14+15	3,745	787	1,641	2,009	368	77	23	5,329	2,276
Wood, paper	16+17+18	4,563	951	3,907	5,626	1,719	76	24	21,123	4,184
Coke and petroleum	19	2,067	431	-2,482	1,861	4,342	59	41	11,719	119,577
Chemicals	20	4,583	1,047	-18,021	2,620	20,641	74	26	18,649	14,754
Pharma	21	3,221	621	3,002	3,367	365	77	23	8,125	41,454
Rubber and plastics	22	2,480	548	-398	7,289	7,686	75	25	12,058	6,428
Other non-metal	23	4,983	1,014	-1,291	4,419	5,710	71	29	25,128	9,928

Metallurgy	24+25	22,484	4,822	-6,812	14,715	21,527	76	24	176,765	49,948
Machine building	26-30	22,532	4,907	1,696	14,522	12,826	77	23	50,156	11,916
Other manufacturing	31+32+33	5,891	1,225	-2,506	3,520	6,026	76	24	33,134	5,320
Electricity and gas	D	27,672	5,908	-2,979	17,986	20,965	54	46	309,872	190,105
Water and waste	E	1,948	422	-212	346	557	64	36	15,841	9,589
Construction	F	10,402	2,211	-9,343	8,447	17,790	71	29	41,045	1,687
Trade	G	56,736	11,143	7,277	74,418	67,141	76	24	127,045	1,546
Transport	H	51,522	10,738	12,820	28,278	15,458	72	28	920,527	67,113
Accommodation and food services	I	3,187	693	-1,948	1,678	3,626	72	28	16,026	2,449
Information and communication	J	14,513	2,581	4,198	12,450	8,252	69	31	55,247	4,630
Real estate	L	6,925	1,419	-42,950	12,126	55,076	60	40	192,239	6,219
Professional and scientific services	M	18,685	2,993	21,080	38,015	16,935	69	32	20,853	839
Admin services	N	10,462	2,195	-4,348	5,054	9,402	70	30	217,329	15,747
Education	P	766	165	103	242	139	68	32	1,708	921

Human health and social work activities	Q	3,708	801	312	914	602	70	30	7,327	1,861
Arts, entertainment and recreation	R	3,592	341	-1,513	1,306	2,819	62	39	18,792	11,022
Other service activities	S,T	745	153	229	331	102	72	28	2,326	716
Total non-financial	A-T excl. K	358,597	74,884	70,063	432,882	362,819	73	27	2,743,019	9,114

Source: Ukrstat, own calculations

Table A5: Financial and further data for FDI companies by industry, 2016

	NACE code	Labour costs	Social contri-butions	Financial result (pre-tax)	Profit of profitable companies	Losses of loss-making companies	Share of profitable companies	Share of loss making companies	Fixed assets remaining value	Fixed assets per company
FDI companies		UAH m	UAH m	UAH m	UAH m	UAH m	%	%	UAH m	UAH 1000
Agriculture, forestry and fishing	A	3,413	691	9,353	11,861	2,507	53	47	19,906	28,724
Mining and quarrying	B	15,387	3,254	3,491	23,196	19,706	48	52	107,285	487,660
Manufacturing	C	37,333	7,677	-15,402	31,729	47,132	60	40	251,814	122,836
Food industry	10+11+12	7,942	1,478	-3,760	7,208	10,967	38	62	38,070	99,139
Textiles	13+14+15	1,641	339	640	685	45	79	21	2,032	11,609
Wood, paper	16+17+18	1,995	391	1,409	2,443	1,034	69	31	11,589	33,787
Coke and petroleum	19	813	167	-2,569	1,066	3,635	55	46	6,728	611,613
Chemicals	20	1,855	459	-16,132	763	16,895	55	45	12,694	111,348
Pharma	21	904	176	404	711	307	48	52	2,607	89,904
Rubber and plastics	22	667	134	568	1,191	624	70	31	3,238	25,296
Other non-metal	23	1,937	369	-864	2,589	3,454	63	37	14,750	90,493

Metallurgy	24+25	11,160	2,418	6,765	11,523	4,757	63	37	142,449	691,502
Machine building	26-30	6,436	1,358	-2,491	2,713	5,204	64	36	15,819	62,037
Other manufacturing	31+32+33	1,979	385	628	837	210	58	42	1,838	7,594
Electricity and gas	D	8,823	1,791	-2,560	6,678	9,238	40	61	71,353	414,846
Water and waste	E	138	28	31	57	26	46	54	389	6,179
Construction	F	1,228	143	-5,173	1,489	6,662	43	57	9,783	13,185
Trade	G	23,346	4,069	-2,738	32,096	34,834	57	43	50,635	13,488
Transport	H	6,233	966	300	6,832	6,531	48	52	28,035	35,532
Accommodation and food services	I	1,139	236	-820	495	1,315	53	47	4,373	14,775
Information and communication	J	6,888	1,047	4,503	9,196	4,693	55	45	36,149	44,739
Real estate	L	1,991	313	-20,841	4,260	25,101	40	60	60,307	28,273
Professional and scientific services	M	5,977	789	-6,428	2,677	9,105	58	42	2,900	2,269
Admin services	N	1,764	306	-4,402	1,993	6,395	56	44	10,827	16,709
Education	P	204	31	4	48	44	54	46	104	2,526

Human health and social work activities	Q	704	134	-81	217	298	67	33	1,055	7,934
Arts, entertainment and recreation	R	401	44	176	1,145	969	41	59	2,056	28,554
Other service activities	S,T	180	26	61	88	27	62	38	121	2,242
Total non-financial	A-T excl. K	115,146	21,543	-40,526	134,058	174,584	53	47	657,094	47,117

Source: Ukrstat, own calculations