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Turnkey Projects Abroad - Challenge to Economic Statistics

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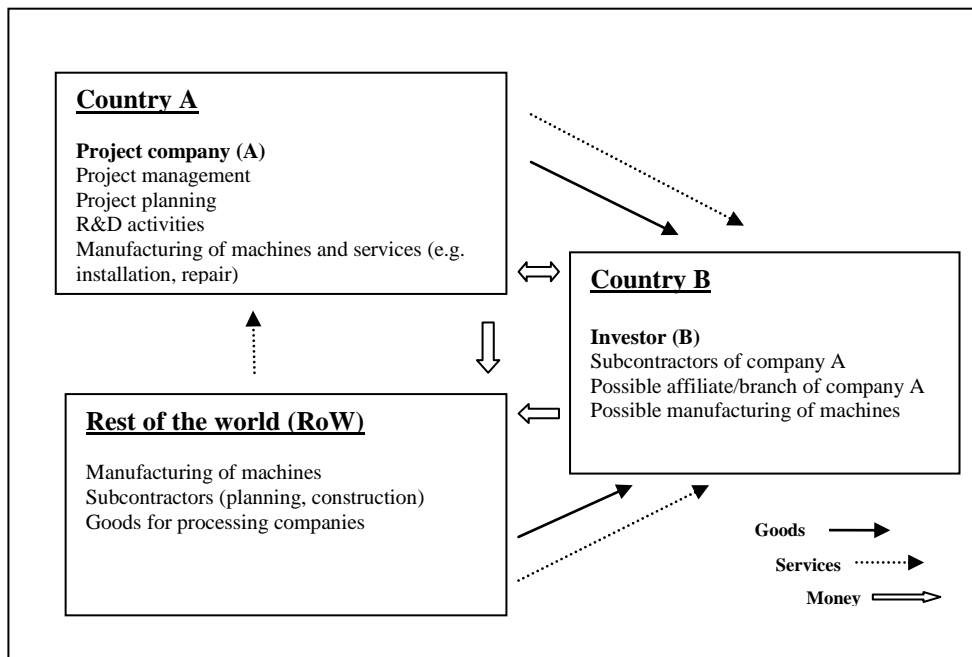
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1. Description of project deliveries and project vendors

In this article project deliveries mean any large-scale turnkey projects delivered by domestic economic units to foreign principals. In projects such as indicated here the project vendor often delivers entire production facilities or parts thereof to a foreign principal. Typical examples of these kinds of projects include power plants, telecommunication networks, gas pipeline networks and paper and pulp mills. In a globalising world large-scale projects are divided into subcontracts and a large percentage of the machines and equipment for the production facilities being built are procured from different parts of the world. A project vendor's own expertise is often related purely to the production technology and project management, product development and sales and marketing. Abroad, the role of a project vendor in such projects is often closer to being a developer familiar with construction projects, involving project management responsibilities: acquiring contractors, overseeing tasks and maintaining contact with the principal and local authorities.

In an ever internationalising world, transnational project deliveries are commonplace. For example, Finnish enterprises deliver power plants abroad, whilst the same types of project deliveries are made to Finland. Figure 1 shows the roles of the actors involved in these types of turnkey projects as well as the goods, service and money flows between different countries.

Figure 1. Example of a turnkey project (Actors and Flows)



An excellent example of an extremely complex and international project delivery is the new nuclear power plant currently under construction in Finland. The following information on the project has been taken from the investor's online press releases and newspaper articles.

In 2003 a Finnish energy company ordered from a French-German consortium a new turnkey nuclear power plant, inclusive of the design, construction and installation of machines and equipment as well as the testing and start-up of the production facility. The actual construction work began in the autumn of 2005 and is still underway, with the project focus now being placed on the installation of machines and equipment. At the beginning of 2010 there were nearly 4,000 persons employed on the site, with the three largest nationalities represented being Finnish (25%), Polish (24%) and German (19%). In all, employees of 66 different nationalities have been involved in the construction of the power plant. In addition to the site construction the majority of the design work and manufacture of machines and equipment is being done on foreign soil. The original project cost estimate was EUR 3 billion, but due to numerous problems and delays at the site, the actual cost is much higher. The power plant was originally scheduled for completion in May 2009, but the current estimated date of completion now stands at early 2013.

In May 2010 the Finnish Government issued a decision in principle for the construction of two new nuclear power plants. Parliament will vote on the permits for the new power plants in summer/autumn 2010. Finland's favourable attitude towards nuclear power stems from the energy-intensive needs of Finnish industry as well as the desire to discontinue using imported electricity. As the five different plant alternatives currently being examined in feasibility studies are being offered by large multinational corporations, the

statistical problems associated with large project deliveries will still be faced in the future.

Below is a list of typical project vendor company and project delivery characteristics, which help in the identification of companies operating in this capacity:

- Majority of project vendor revenue comes from abroad
- Project vendor focuses on design and project management
- Majority of the project vendor's own employees serve in supervisory role
- Project vendor manufactures no more than a portion of the production facility machines itself
- Nearly every project is unique
- Project duration ranges from a few months to years
- Projects are often invoiced according to their degree of completion
- In some cases the project vendor establishes a foreign subsidiary or branch/affiliate, but often the vendor will only register itself for liable to pay VAT.

Foreign project deliveries include many global phenomena that complicate the compiling of national statistics. Particular examples of these include manufacturing, subcontracting, processing abroad and the use of foreign labour. The ownership positions between the actors and monetary transactions related to the project as a whole are often difficult to identify. This article presents Finnish experiences with the challenges that project deliveries pose to economic statistics. Unfortunately, there are still no ready recommendations or proposed solution models as of yet, but there are some changes currently being made to improve the compiling of statistics, and these are described in Chapter 4.

2. International guidelines on project deliveries

2.1 International guidelines

Project deliveries often represent significant investments in a host country and their impact on national production is especially emphasised during the project. For example, the scope of construction work on the nuclear power plant currently underway in Finland is estimated to be approximately 30,000 staff-years. When it is up and running, the power plant will only directly employ a few hundred people. When local indirect employment effects and electricity production for industry are taken into account, the power plant will represent a major investment for the national economy also over the long term.

International manuals do not exactly specify guidelines as to how foreign project deliveries should be treated in, for example, international trade statistics, balance of payments or national accounts. Project deliveries are by nature often close to construction projects, for the treatment of which there are guidelines in related manuals; these guidelines can also be partially applied

to project deliveries. However, the construction itself is often purchased as a sub-contract from the host country, whilst the project vendor is primarily responsible for the design of the production facility and project management. The project vendor's own export product is usually something more akin to engineering services or other business services. In addition, project deliveries often comprise extensive machine and equipment installations, for the treatment of which there are also international guidelines. Project deliveries may also have characteristics similar to commission trade, particularly if the project vendor owns a foreign company, through which the project vendor provides, for example, equipment and engineering services.

According to international statistical recommendations (SNA, ESA, BOP, MSITS), foreign construction projects should be processed in different ways depending on the duration and nature of the project (see Table 1).

If the duration of a construction project is less than a year, it should be processed as the export of construction services and, correspondingly, the costs accrued in the host country as the import of construction services. Any goods that a project vendor itself delivers should be taken into account in service trade calculations in order to ensure that items already shown in statistics on international merchandise trade are not re-entered.

According to the manuals, construction projects lasting longer than one year are always the host country's own investments and should be treated as direct investments in cases where a foreign company is in charge of the project. Consequently, foreign, if necessary, even artificial, branches/affiliates should be formed for projects being delivered to different countries by the project vendor. These branches/affiliates purchase goods and services from domestic project company and repatriate any profits generated by the project. These items should be included on both the project vendor's and the principal's national balance of payments.

As the project progresses, real assets are also tied to the branch/affiliate. These assets should be recorded on the financial account of the balance of payments. The project principal often makes payments to the project vendor according to the degree of completion. The share of these payments relating to project costs should be entered on the financial account as return of capital on direct investment and the share exceeding project costs as dividends on direct investment inclusive of repatriation of branch/affiliate profits. Furthermore, it is reasonable to assume that, upon completion of the project, branches/affiliates will no longer hold any assets and no entries for reinvested earnings on direct investments will be necessary.

In practice simply identifying these types of foreign branches/affiliates and their timely registration is in itself extremely challenging. The running of artificial branches/affiliates in the balance of payments would also require precise data on, for example, project costs, payments made by the principal and project payment receivables. Regular reporting of these data by project and country is often impossible for companies.

Table 1. Summary of international recommendations on treatment of construction abroad (SNA-93, ESA-95, BoP-5th edition)

<u>Construction projects (<1 year)</u>	<u>Construction projects (>1 year)</u>
<p>(Construction work executed abroad on a temporary basis: repair and maintenance projects)</p> <p>Project is recorded as construction services</p> <p>1) The total value of the contract is recorded as an export of construction services</p> <p>2) The expenditures (local supplies) associated with the project are recorded under the import of construction services</p> <p>3) In the case of exported goods from the project company country there has to be corresponding offset item for imports in order to avoid double counting of these goods</p>	<p>(Large-scale construction work executed abroad that often takes several years to complete: investments and reconstruction projects)</p> <p>Project is considered a foreign direct investment and foreign branch/affiliate for project company should be established</p> <p>--> Production of the project is included in the production of the host country</p> <p>--> Change in ownership for goods and services supplied to project by the project company:</p> <p>1) Goods exported to the project site are recorded under the goods account</p> <p>2) Engineering and project management services are recorded under the services account</p> <p>--> The surplus (income over expenditure for the project) is recorded under direct investment equity income</p>

2.2 Numerical example of a project delivery

The following example shows the entry of project delivery revenues and costs in compliance with international statistical recommendations for construction, both in the balance of payments and in national accounts. The approaches presented in the previous section regarding entries related to direct investments made in the financial accounts will be set aside in this context. The Finnish company in the project delivery example is delivering a turnkey power plant to a foreign site. The total value and cost structure of the project is shown in Table 2.

Table 2. Numerical example of the turnkey project, revenues and costs

Contract value	100
Costs of the project¹	80
Supply of goods from Finland	10
Supply of goods from other countries	20
Supply of services from other countries	10
Local supply of goods	10
Local supply of services	10
Local salaries	20
Revenues-Costs	20

If the project duration is less than one year, it should only appear in international trade in goods and services statistics. The following items would appear on Finland's balance of payments and national accounts: Export of goods: 10, Export of services: 100, Import of services: 80². For this project, the goods trade would net Finland 10 and the service trade 20 surplus units. International manuals make no specific reference as to whether these types of projects should be entered in gross or net figures. There are also no guidelines that specify under which service item project revenues and costs should be entered. The available alternatives are, at least, construction services and other architectural and engineering services in the category of business service activities.

If the project delivery example were to exceed one year, it should be treated as a direct Finnish investment abroad. In this case a foreign branch/affiliate would purchase 10 units worth of goods from Finland and the project would earn 20 surplus units, which is entered as property income for Finland. All 20 of these units, however, would not be entered under direct investment yields, but rather a portion of them would fall under the exporting of Finnish services as compensation for engineering work and project management. The extent of the service portion depends on the nature of the project and the business model employed by the project delivery company.

The one-year time limit on the treatment of foreign construction projects attempts to distinguish between investment-based construction and renovation work. Project deliveries generally result in investments in the site country and they should be treated as direct investments of the project companies and included in direct investment statistics. In addition to this, all major project deliveries seem to be over one year in duration, which also favours their

¹ Excluding in-house costs of the project company (e.g. planning, management)

² Furthermore, according to the Manual on Statistics on International Trade in Services – MSITS), local salaries should be deducted from service imports and added to the compensation of employees abroad.

treatment as direct investments. In practice foreign direct investment statistics do not usually capture these types of foreign branches/affiliates, but rather they primarily cover the incorporated foreign affiliates of domestic companies.

3. Problems in economic statistics caused by project deliveries

3.1 Business and Enterprise Group Register

The quality and timeliness of information in the Business and Enterprise Group Register is vital to all economic statistics. The Business Register serves as a basis for the compilation of several statistics and describes the company populations which the data in sample-based statistics should be proportioned to by using weight coefficients derived in different ways. From a qualitative standpoint, project vendors and their branches/affiliates are difficult to identify for Business Register and defining their field of operation also often depends on the selected perspective (the company's national vs. global operations).

In order for statistics on foreign direct investments to include data on the domestic company branches/affiliates located abroad and, conversely, foreign company branches/affiliates located in the home country, the data for these units must be kept up-to-date in the Business Register. This, however, is a challenge, as a major international project vendor may have dozens of projects over one year in duration running simultaneously abroad, not to mention the fact that a substantial number of these projects change every year. On the other hand, identifying the foreign branches/affiliates of companies making smaller, occasional project deliveries is also difficult.

Defining the project vendors' industry for the Business Register is also not very clear. Even the revised statistical classifications of economic activities (ISIC Rev.4, NACE Rev. 2) fail to clearly define how companies which have outsourced part or all of their industrial production should be classified. Seen from a global standpoint, project vendors are very similar to manufacturing companies, but at the national level their operation is usually closer to that of a service provider, primarily involving the production of engineering and administrative services.

The classification of the economic activities of project vendors has an impact on the structure of the economy. For example, Finland's manufacturing proportion would fall by 1-6 percentage points if measured by value added, depending on which criteria project vendors are considered to be service providers. The problems are further exacerbated by the fact that various statistics and statistics users may disagree on what a company's true field of activity is.

3.2 Enterprise statistics

Regardless of whether project vendors are classified as manufacturing or service enterprises, the problem for statistics on economic trends is the

measurement of their domestic production. In Finland domestic manufacturing output was previously measured primarily using physical production quantities, e.g. tonnes of steel, number of machines. Manufacturing enterprises are expanding their operations more toward services and in order to determine qualitative changes in commodities the inquiry of the Volume Index of Industrial Output is increasingly making use of value data in Finland. In addition to this, the inquiry asks enterprises for a breakdown between manufacturing and other services. Manufacturing enterprises already report on maintenance services in surveys quite well, but engineering services provided in cases involving project vendors are still difficult for respondents to understand. The enterprises often do not consider themselves to be exporting services, but rather turnkey industrial production facilities. More comprehensive reporting of engineering and project services often requires statisticians to have a greater understanding of the company's business as well as in-depth discussions with its representatives.

The problem with commodity statistics is to identify produced/exported goods and services. The conventional way to request data separately from manufacturing and service enterprises is not very effective when it comes to project vendors. Moreover, the enterprise's economic activity and the commodity classes it produces are often in conflict, and responses are also made difficult by the chosen perspective. Seen from a global standpoint, a produced commodity (e.g. a steam boiler) often differs from national production (design and installation of steam boilers).

Even when using annual business statistics data, gaining an overall picture of a certain project vendor or project delivery is nearly impossible. The turnover or costs of Finnish enterprises cannot, at least for the time being, be differentiated easily between domestic and foreign. Depending on the chosen enterprise organisation/entry protocol, the revenues and costs of foreign branches/affiliates may either be included or not included in the financial statements of a legal company operating in a certain country.

3.3 Statistics on international trade

As the goods trade and statistics on it are still based on physical, transnational goods shipments, any goods exports or imports related to project deliveries appear in statistics on merchandise trade. Extensive international projects may indeed include a number of phenomena that complicate the compiling of national statistics on goods trade. Examples of these phenomena include various types of re-exportation or goods for processing abroad - these will not be specifically discussed in this article. Instead, the transfer pricing of goods in international trade related to project deliveries can be a considerable problem and should be addressed.

Transfer pricing involves how companies within the same enterprise group set prices for their goods and service flows. This is a complex set of problems, not only for compilers of statistics on international trade, but also for tax authorities. By setting the prices for its subsidiaries itself, a group often attempts to show revenues in the desired country, which may have lower

taxes. The potential goods transfer pricing problem related to project deliveries makes it difficult to gain an accurate assessment of an individual company's real revenue and cost flows.

Where statistics on international trade in services are concerned, project vendors are challenging respondents, as the data providers have a difficult time determining the percentage of services within the total value of the project. In many cases these enterprises prefer not to record sold services to abroad at all, as the delivery is comprised of an entire physical production facility. On the other hand, the project goods exported from the home country of the project vendor are often nearly non-existent and even purchases from abroad are negligible. The survey on international trade in services sent to enterprises in Finland does not contain a separate section for project deliveries, and even where international trade in construction services is concerned, only projects less than one year in duration are given attention in accordance with international recommendations.

3.4 Price statistics and labour market statistics

Fast, reliable Producer Price Indices (PPI) are needed, for example, in the calculation of volume indices and national accounts. Even for price statistics, measuring price trends for project deliveries is difficult. The main problem deals with the question: What products does the project delivery include? In other words, what price needs to be measured - the total price of the delivery or the price of domestic production, such as engineering work? The price concept also involves timing issues: Should the prices valid at the moment the tender is issued be measured or the price of the projects underway during the period in question?

In addition to problems with concepts, there are numerous practical problems related to the measurement of project delivery price trends. The projects are usually unique by nature, which makes it difficult to identify a homogeneous product and measure its price over time. In addition to this, the prevailing price level in the host country and any risk premium related to the host country have a significant impact on the price of a certain delivery, even if the product itself was identical.

One alternative is to request that enterprises report the price trend for some sort of a model project over time. However, the identification and updating of such model projects requires in-depth industry expertise that is rarely found at statistical offices.

The specification pricing approach found in Eurostat's Price and Volume Manual is recommended for unique products. This, however, would still require a resource-intensive effort and the gathering of such detailed data that it is usually practically impossible to realise.

Problems with labour market statistics in project deliveries and globalisation are more commonly related to the measurement of the number and labour input of foreign employees. In Europe measuring the number of foreign employees has been further complicated by the elimination of registration for-

malities resulting from the expansion of the European Union. In project deliveries a portion of the project host country's foreign employees are sent to the country by the project vendor while some of the foreign labour working at the site are on the payrolls of foreign subcontractors.

3.5 Balance of payments and national accounts

Based on earlier Chapters, it can be said that the coverage of project deliveries through various statistical inquiries and in various statistics is in some cases deficient and inconsistent. Reporting of the data in question is also problematic for the enterprises involved in the project (e.g. specification of a service, profit from an individual project, transfer pricing in material deliveries, etc.). All the above-mentioned problems with source statistics accumulate in the compilation of the balance of payments and national accounts, and gaining an overall picture of a specific project and its cash flows using statistical survey data is nearly impossible.

Due to the problems with source statistics, domestic enterprises engaging in project exports often generate turnover abroad. In national accounts the itemisation of the components of this turnover is difficult. A logical treatment would require a breakdown of turnover between, among other things, goods exports and service exports, data on the compensation of employees abroad, material purchases from abroad, subcontracting agreements and any profits earned. Insufficient data makes the calculation of the project vendor's intermediate consumption and its domestic value added difficult. A possible error in output may lead to incorrect estimates for domestic demand items in the balancing of the supply and demand for the whole economy. The above-mentioned problems of commodity statistics are reflected in product breakdowns in supply and use tables while the problems of price statistics are reflected in volume calculations.

Growth in the number of foreign employees has also posed challenges for national accounts, when an increasing percentage of the real labour input has become unattainable in national labour force statistics and not even national enterprise statistics can capture the labour input. For example, it is estimated that there are currently over 10,000 foreign construction professionals working in Finland, which is equivalent to nearly 10 percent of the industry's total labour force.

For example, some service exports or imports might be omitted from the balance of payments, thus increasing the surplus/deficit on the current account. Calculation of the current account is also complicated by project delivery salaries paid abroad and received from abroad as well as the factors of uncertainty related to their entry. The problems of the current account are reflected in the calculation of national income.

Project deliveries lasting several years create a direct investment relationship. This is not, however, always identifiable in practice, nor are project deliveries considered direct investments, at least in cases where a subsidiary is not established in the host country. Consequently, the project is not included

in the financial account of the project's country of ownership nor do the revenues generated by the investment appear in the current account.

4. Statistics development

4.1 Statistics Finland's working group on large enterprises seeks to improve the coherence of economic statistics

At Statistics Finland project deliveries and the problems they pose are addressed in the working group on large enterprises. The working group began in 2008 and its goal is to take care of large enterprises as key data suppliers and ensure the quality and consistency of their data in source statistics and national accounts. The tasks of the working group on large enterprises are to:

- Maintain focus on Finland's largest enterprises/groups
- Promote good co-operation with the data providers of large enterprises
- Profile sensible data collection units/statistical units from the perspectives of statistics and data providers
- Develop methods for ensuring the accuracy of data obtained from large enterprises
- Identify promptly consistency problems between various items of data and standardise the processing of data on large enterprises in different statistics
- Strengthen co-operation in economic statistics.

The working group on large enterprises addressed problems posed by project vendors in the autumn of 2009 and came up with a recommendation to revise the statistics on international trade in services in respect of project deliveries. The goal of the revision was to find a practical solution which would improve the current state of the statistics as well as make it possible to develop the description of the statistics also in the future. The revision combined the question about exporting of construction services with project deliveries abroad, and the cost itemisation was changed as follows:

Export of construction services and project deliveries abroad

Gross revenues from a foreign company

in which: Export of goods from Finland related to projects

Costs related to projects abroad

Enterprises may also be requested to report on project operations abroad broken down between projects over and under one year in duration, which would better enable to meet the recommendations set for both the balance of payments and national accounts. The inquired items would make it possible to calculate the remainder consisting of the export of construction or engi-

neering services. In addition to this, a certain percentage of income earned abroad can also be entered as profit/property income if it is deemed necessary.

Enterprises that report large figures for this item can be contacted afterwards and asked for more detailed data to help in data processing (e.g. type of project, project duration, branches/affiliates established abroad, etc.). The additional information obtained can be used to facilitate the processing of data as well as develop statistics on foreign direct investments in respect of the sample population and inquiry.

The new approach to collecting data on international trade in services will begin with the annual survey for 2010. The plan is to continue entering in accordance with the survey on international trade in services the net items earned from export/import in project deliveries as international trade in services as follows:

Export of engineering services = Gross income from a foreign enterprise – Project-related export of goods from Finland – Project-related costs abroad.

These changes will make the description of the engineering work performed in Finland for project deliveries and its intended purpose more logical in statistics. The value of architectural, engineer and other technical services will presumably increase significantly over current levels, once there are guidelines for companies to report figures using the new approach.

4.2 Organisation of statistics production and international guidelines

Producing statistics on project deliveries is challenging, but not impossible, provided there is a desire to make it happen. The business model of project vendors should be better understood by statistical offices. The organisation of national accounts by fragmenting the calculation so that different people produce figures on e.g. domestic output, international trade and investments, is becoming more and more problematic with globalisation. Organised in this way, certain project deliveries are divided into sections in the calculation, even though the logical treatment would require the comparison of various source statistics and looking at the delivery as a whole. National accounts and balance of payments compilers should also co-operate in order to avoid major inconsistencies.

Project deliveries should also be discussed in international working groups and an effort should be made to establish common guidelines, as otherwise different countries will surely adopt different practical solutions for the treatment of data on project deliveries.

The new EU Statistics Act will also allow for an even more effective exchange of data between countries involved in project deliveries in Europe. It is also possible to use the EuroGroups Register (EGR), which is a register currently under development that contains information on multinational enterprises. The usefulness of EGR, however, is rather limited, as the capturing of project delivery branches/affiliates would require extremely frequent up-

dating of the register. Furthermore, actual branches/affiliates or subsidiaries are usually not established for projects, but rather the project may only involve the forming of a fixed establishment for VAT purposes.