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**Draft Chapter 4
Measurement of multiterritory enterprises**

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1. Introduction

1. The activities of multiterritory enterprises provide measurement challenges to the national statistician. Multiterritory enterprises operate their activities on a temporary or permanent basis over more than one economic territory. These enterprises are described in BPM6 4.41 as “*Some enterprises may operate as a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it is run as an indivisible operation with no separate accounts or decisions, so that no separate branches can be identified. Such enterprises may have operations including shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels, and undersea cables. Some NPISHs also may operate in this way.*”

2. Multiterritory enterprises are well described and discussed in 2008 SNA and BPM6, but are at the same time non-existent as a concept in the model of national accounts; the real world multiterritory enterprises are in the national accounts always allocated to separate and clearly defined economic territories and thus to separate nations. However, conducting this allocation is often quite challenging and several measurement issues, both related to the methods used and to the data available have to be dealt with. Splitting the economic activities of multiterritory enterprises per country on the basis of ‘prorating’ or the creation of ‘notional units’ is recommended if separate branches with accounts or decisions are impossible to identify (2008 SNA 26.35/BPM6 4.43). The creation of notional units may give rise to imputations of cross border financial transactions which may be difficult to account for in practice. As some of the examples in the chapter show, there seems to be few alternatives to the implementation practice of notional units, given that we are following the SNA/BPM framework.

3. The chapter gives an overview of the concepts and principles of multinational enterprises in SNA/BPM, and discusses the difficulties and measurement problems related both to methods and data sources. This is exemplified by using case studies. Finally, the chapter will give some recommendations on the way forward.

4. Some examples discussed below pertain to situations where BPM6 recommends identifying notional units (i.e., branches) because significant economic activity is undertaken by a non-resident enterprise that has not created a separate local legal unit (such as long-term construction projects) or where a non-resident acquires ownership of land, buildings, or other immovable structures.

Although these activities may not meet every element of the BPM6 definition of a multiterritory enterprise (for example, perhaps these activities do have separate accounts), they are nonetheless described in this chapter, for completeness.

2. Relevant concepts applicable to multiterritory enterprises in the national accounts

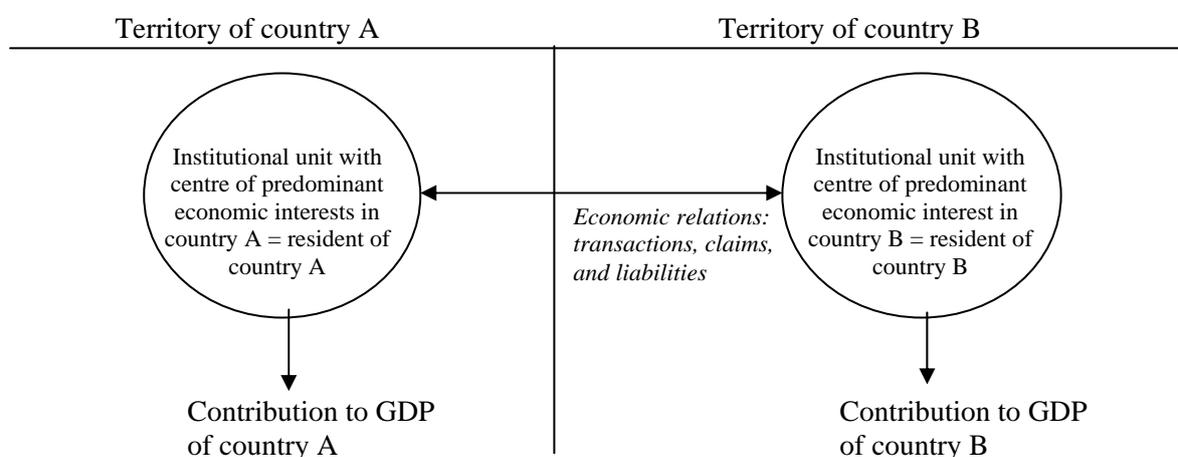
2.1 Institutional units and multiterritory enterprises

5. The national accounts map the economy of nations. A fundamental question to be answered in building the accounts is how to define the economy of one particular nation and to delimit it from the economy of other nations. The point of departure is a universe of economic units (institutional units) and, mainly geographically determined, economic territories. The connection of entities to a particular economic territory is determined from aspects such as physical presence and being subject to the jurisdiction of the government of the territory. The most commonly used concept of economic territory is the area under the effective economic control of a single government (2008 SNA 4.10).

6. One fundamental rule is that one economic unit can be resident in one and only one economic territory, and thus resident of one and one country only. The residents of a country are those units with a centre of predominant economic interest on its territory, meaning engaged in economic life in the country's territory for an extended period (2008 SNA 4.13). However, in the same paragraph it is said that "... *Exceptions may be made for multiterritory enterprises that operate in a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it cannot be broken up into separate branches or a parent and branch(es) because it is run as an indivisible operation with no separate accounts or decisions. Such enterprises are typically involved in crossborder activities and include shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels and undersea cables. If it is not possible to identify a parent or separate branches, it is necessary to prorate the total operations of the enterprise into the individual economic territories.*"

7. The economy of one particular country as defined by the national accounts can, thus, be seen as the aggregate of the economy of its resident institutional units (2008 SNA 4.23). Resident and non-resident units will engage in transactions and establish claims with each other as shown on the rest of the world account (RoW) of the national accounts. Figure 1 illustrates the basic principles in delineating one country's economy from other countries' economies.

Figure 1: Residency in the national accounts



8. Enterprises are institutional units whose main activity is to produce goods and services for market sale. In line with the definitions outlined above, one particular enterprise will be deemed to be resident of one single country and its output will contribute to the GDP of the country of which it is resident. Goods and services supplied to non-residents are recorded as exports transactions in the RoW-account (SNA para 16.5).

9. In reality, the economic world is not as simple as described above. Global production is a term used to describe an increasingly more common way of organizing production activities across national borders, meaning that enterprise groups operate in more than one territory. According to SNA (6.84) GDP measures the production of all resident producers. Even though in practice most of the productive activity of resident producers takes place within the country in which they are resident, some of the production of the resident unit may take place abroad. This will for instance be the case for mobile transport services (shipping lines) or for a resident producer of machinery and transport equipment that have employees working abroad temporarily on repair or servicing of the equipment. This output is an export of a resident producer and the activity does not contribute to the GDP of the country in which it takes place.

10. A special case is enterprises involved in crossborder activities which are challenging to measure and demarcate between the different territories as long as the enterprises are run as indivisible operations with no separate accounts or decisions. The SNA underlines the importance of data for each national economy, and recommends to prorate the operations in multiterritory enterprises according to an appropriate enterprise specific indicator of the proportions of operations in each territory. This is the proposed solution if separate branches are impossible to identify. SNA 26.35 says “... *If possible, separate branches should be identified, but if the entity is run as a single operation with no separate accounts or decision-making for each territory that it operates in, it is not possible to delineate branches. In such cases, because of the central focus on data for each national economy, it is necessary to split the operations between economies. The operations should be prorated according to an appropriate enterprise specific indicator of the proportions of operations in each territory. The prorating treatment may also be adopted for enterprises in zones subject to joint administration by two or more governments.*”

11. The interpretation of this paragraph is that in the absence of a legal (institutional unit) one should ask the enterprise to report for a notional unit (artificial units). If that is not possible, the national accounts should impute one or more notional units, by prorating relevant activity. Prorating implies a degree of judgement. Sometimes it may involve imputing transactions between a parent enterprise and its notional unit. According to BPM6 4.43: “The factor used for prorating should be based on available information that reflects the contribution to actual operations. For example, equity shares, equal splits, or splits based on operational factors such as tonnages or wages could be considered. Where taxation authorities have accepted the multiterritory arrangements, a prorating formula may have been determined, which should be the starting point for statistical purposes.”

12. According to BPM6 4.44: “The proration of the enterprise means that all transactions need to be split into each component in each of the economic territories. The treatment is quite complex to implement. This treatment has implications for other statistics and its implementation should always be coordinated for consistency. Compilers in each of the territories involved are encouraged to cooperate to develop consistent data, avoid gaps, and minimize respondent and compilation burden, as well as assist counterparties to report bilateral data on a consistent basis.” It should be noted that creating a notional unit is out of necessity (i.e. compiling data for each national economy), and an exception to the general SNA/BPM rule of not imputing transactions.

2.2 Rules for establishing notional units

13. According to the international recommendations, a non-resident unit that has substantial operations over a significant period in an economic territory, but no separate legal entity for those

operations, should be identified as an institutional unit or branch (BPM6 4.26). This unit should be identified for statistical purposes because the operations have a strong connection to the location of operations in all ways other than incorporation. However, the identification of branches as institutional units requires indications that substantial operations can be separated from the rest of the entity.

14. To be identified as a branch requires either that a complete set of accounts, including a balance sheet, exists for the branch, or it is possible and meaningful, from both an economic and legal viewpoint, to compile these accounts if they were to be required (BPM6 4.27 and 2008 SNA 26.30). In addition, in general, the branch should undertake production on a significant scale in the territory outside that of its head office for a significant period (sometimes for statistical purposes this advice is interpreted to mean for one year or more). Indicators that could confirm the location include purchasing or renting of business premises, acquiring of capital equipment and recruiting local staff. Another indication is whether the branch is recognized as being subject to the income tax system of the economy in which it is located even if it may have a tax-exempt status.

15. The identification of branches has implications for the statistical reporting of both the parent and the branch. The operations of the branch should be excluded from the institutional unit of its head office in its home territory and the delineation of parent and branch should be made consistently in both of the affected economies. Each branch is a direct investment enterprise (BPM6 4.28).

16. To conclude, a notional unit, separate from the institutional unit of its head office, should be established if (BPM6 4.27 and 2008 SNA 26.30):

- it has substantial production in a territory outside that of its head office,
- the operations can be separated from the rest of the entity and identified as an institutional unit, i.e., as a branch,
- it has a complete set of accounts, including a balance sheet, or it is possible and meaningful to compile these accounts if they were to be required.

17. As noted in the Introduction, institutional units with substantial production in a territory outside that of the head office may not, in some cases, meet every element of the BPM6 definition of a multiterritory enterprise (for example, perhaps these activities do have separate accounts), but they are nonetheless described below, for completeness.

2.2.1 Construction projects

18. One example that does not meet the definitions of a multiterritory enterprise, but is mentioned for completeness is large construction projects that can be undertaken by a non-resident enterprise without the construction company creating a local legal unit. This is often the case for major projects such as bridges, dams, and power stations. If it takes more than a year to complete the construction activity, and if the project is managed through a local site office, the operations usually satisfy the criteria for identification of a branch. In this circumstance, it should be treated as an institutional unit in the country where the construction project takes place, and a notional unit is established as described in the introduction to section 2.2.

19. However, if the construction activity is short term (e.g., if it lasts for less than a year), it may not satisfy the conditions for recognition as a branch. In this circumstance, the work provided to customers resident in the territory of those operations is classified as international trade in construction and included in services. This means that the production is recorded as an export of services by the home territory and as an import of services by the territory of operations (BPM6 4.29).

2.2.2 Production delivered from a base

20. Operators of mobile equipment, such as ships, aircraft, drilling platforms, and railway rolling stock, also may operate across more than one economic territory, and hence the criteria for recognition of a branch also may apply in these cases if the operations in a territory outside the home base are sufficiently substantial (BPM6 4.31).

21. For example, a secondary base for servicing the fleet with long-term presence and its own accounts may satisfy the definition of a branch. If it does not satisfy the definition of a branch, the activities of the ship-operating enterprise are included in the economy where the operator is resident (BPM6 4.136).

22. Another case which has similarities to mobile equipment is a pipeline that passes through a territory, but is not operated by a separate legal entity in that territory. This pipeline should be recognized as constituting a branch if there is a substantial presence and availability of separate accounts. In cases in which such operations are not separate institutional units, there may be payment of rent to a notional unit owning the land or a long-term lease of land, or there may be a multiterritory enterprise of the type discussed above.

23. When a branch is identified, there are direct investment inflows to the territory. The provision of goods or services to customers in that territory is resident-to-resident transactions. However, if the operations are not substantial enough to qualify as a branch, the provision of goods or services to customers in that territory are imports of that territory (BPM6 4.33).

2.2.3 Notional resident units for land and other natural resources owned by non-residents

24. 2008 SNA (4.15) underlines that owners of land, buildings and immovable structures in the economic territory of a country, or units holding long leases on either, are deemed always to have a centre of economic interest in that country, even if they do not engage in other economic activities or transactions in the country. With very few exceptions (such as land and buildings acquired for embassies), all land and buildings that are physically located in a territory are deemed to be owned by residents. When land located in a territory is owned by a non-resident entity, a notional resident unit is identified for statistical purposes as being the owner of the land. A notional unit is also identified for a lease of land, or buildings, or land and buildings together. This notional resident unit is a kind of quasi-corporation. The non-resident is treated as owning the notional resident unit, rather than owning the land or structures directly. This treatment is designed so that land and other natural resources are always assets of the economy in whose territory they are located. Otherwise, the land would appear in another economy's national balance sheet (BPM6 4.34).

25. In 2008 SNA (4.15) it is also underlined that extraction of subsoil resources can only be undertaken by resident institutional units. An enterprise that will undertake extraction is deemed to become resident when the requisite licences or leases are issued.

26. According to SNA 4.49, the legal owner owns the equity and receives income from the notional resident unit in form of property income from abroad.

3. Multiterritory enterprises – cases studies

27. The following sections describe different situations in which enterprises can be said to be multiterritory or engaged in multiterritory production. The cases mainly address data availability and measurement issues.

3.1 Affiliates abroad

28. In practice the population of resident enterprises will often be determined by the enterprises registered in the Establishment-Enterprise Register of Statistics (EER). This is the case in Norway, where the population will be the target of different statistical surveys designed for use in compiling the national accounts. The starting points for the determination of this population are the various administrative registers covering Norwegian legal units. The basis for the data collection of economic variables is the business accounts of the legal units. Normally, these accounts reflect economic activities that should be included in the Norwegian national accounts.

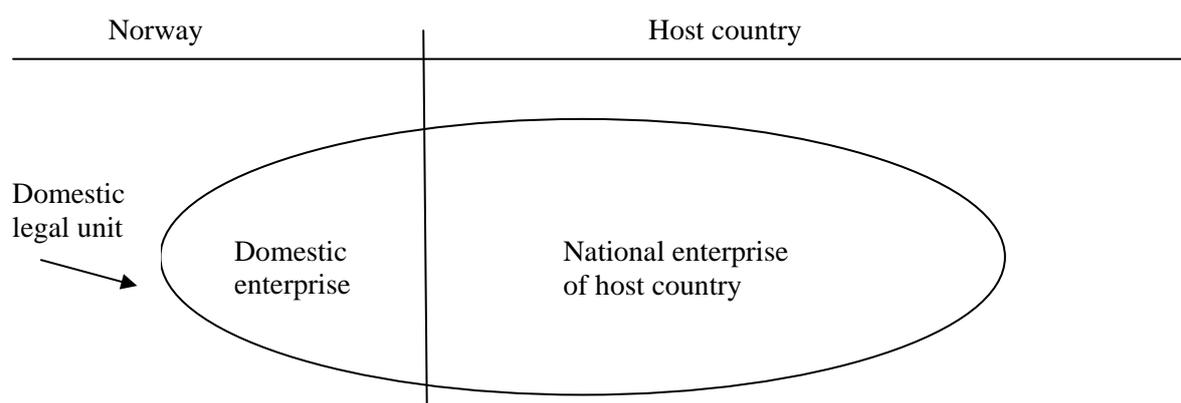
29. However, an enterprise resident in Norway often engages in economic relations with other countries through ownership of economic units, for example a daughter company in the host country. The daughter company will then normally be a resident of the host country and contribute to the GDP of that country, while the mother company will receive returns in terms of primary income, etc.

30. Sometimes the permanent activity abroad is not organised through a separate legal unit of the host country, i.e. a daughter company, but rather as a direct operation. We find such examples within the petroleum extraction industry. Here the accounts of the mother company will include both balance sheet items and profit and loss accounts items that reflect permanent activities abroad. There are examples of Norwegian legal units in terms of a limited company with no employment and no productive activity in Norway that include in its accounts permanent activities taking place abroad over which it has full ownership.

31. These cases are examples of multinationals, but do not fit with the description of a multiterritory enterprise operating as seamless operation over territories as described in BOPM6 4.41. When the activity abroad is of permanent character and its activities are substantial, a notional institutional unit is deemed to exist in the host country (see figure 2).

32. The Norwegian domestic legal unit is split into two notional enterprises: a resident enterprise with claims on the rest of the world and a notional institutional unit performing the economic productive activity in the host country.

Figure 2: Notional institutional units versus legal units



33. The rest of the world account of the national accounts records all economic relations between the resident enterprise and the non-resident (notional) enterprise, normally comprising various income flows and claims and debt positions. A main goal is to avoid recording the productive activity occurring in the host country as a contribution to the value added (GDP) of the home country. To achieve this, the consolidated reports from the domestic legal units need to be adapted to economic accounting principles. However, there are questions of how to record output and intermediate consumption in the two economies.

34. The measurement problem is related to the extraction of data for economic accounting purposes from commercial accounting records that are used by enterprises mainly for reporting information on a worldwide consolidated basis. The 2008 SNA suggests to solve this problem by asking the legal unit to report separately for legal and notional units, or to “prorate” (or allocate) consolidated data. The question of how to allocate output and intermediate usage between legal and notional units is best addressed by examining which unit is subject to the risks and rewards of production. There may be a fee for service relationship between the units, or there may be a foreign direct investment relationship.

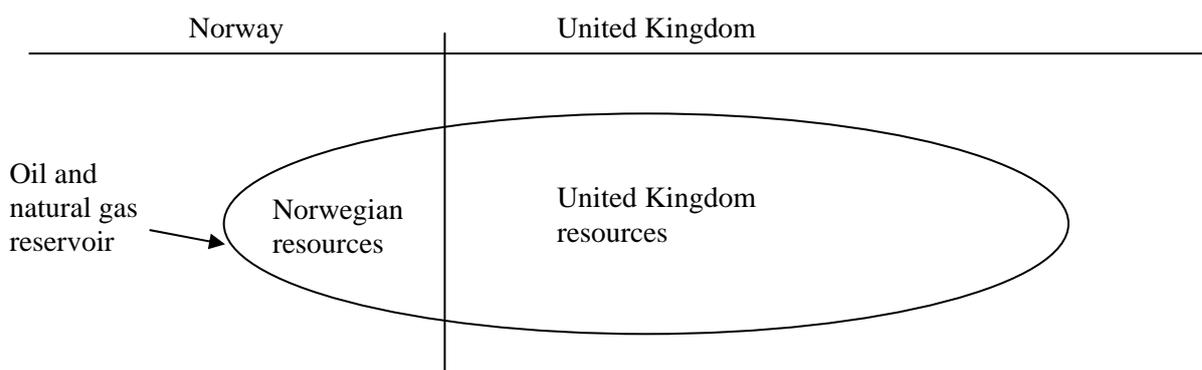
35. In some cases the allocation problems may be solved through direct contact with the companies involved, and the provision of detailed instructions on how to report data for statistical purposes.

3.2 Cross border natural resources – petroleum reservoirs

3.2.1 Case 1 – Norway

36. In the North Sea lays sub-sea oil and natural gas reservoirs that cross the Norwegian continental border with United Kingdom (UK)¹.

Figure 3: Cross border petroleum reservoirs



37. One field is fully operated by Norwegian oil companies, while UK companies operate the other. This means that both the Norwegian and the UK oil companies are running seamless operations over their own and one other country’s economic territory.

38. The agreed treatment between Statistics Norway and Office for National Statistics (ONS) for recording in the two countries’ national accounts and balance of payments statistics has been to prorate the operations as recommended in 2008 SNA/BPM6. Both income and costs should be prorated according to the two countries’ ownership share to the resources. The ownership shares are based on accepted knowledge of the exact physical location of the oil and natural gas reservoirs.

39. For the field operated from Norway the Norwegian national accounts record as output only the value of the petroleum representing its ownership share to the reservoir. However, 100 per cent of the operating costs for the operation of the field are recorded as costs in the Norwegian national accounts which leads to underestimating of the Norwegian value added. Therefore an offsetting item is recorded as an export income, reflecting a Norwegian produced service rendered to the UK by operating their part of the field and bringing the Norwegian value added up to its correct level, defined as the ownership share. For the other cross border field which is operated by UK oil companies the opposite entries are made in the Norwegian national accounts and balance of payments.

¹The two fields are Staffjord and Murchinson.

40. In principle, the question probably is whether the geographical allocation of the activity should be based on where the extraction activity physically takes place or where the location of the reservoir is. In the latter case Norway's receipts would be in the form of direct investment income, rather than exports. The long term nature of the activity may suggest that the operator of the field should be regarded as a direct investment enterprise, rather than as a nonresident seller of oil extraction services. However, all the installations (extraction rigs etc) are placed on the Norwegian territory although part of the reservoir itself crosses over to the British territory and is owned by the UK. In that sense all economic production activities permanently take place on Norwegian territory and are conducted by units resident of Norway, including the extraction service produced on behalf of the UK. When the decision on this methodology was made in the 1970's it was considered odd to have a branch in the UK without any physical activity taking place on UK territory. Hence, Statistics Norway see this as a service of extracting natural resources permanently taking place on the country's territory, while the reservoir is placed on another country's territory (which may also be seen as odd).

41. On a practical level, as all activities take place and are organised from the Norwegian territory, all statistical information are available from Norwegian units only. Seen from the British statistical office's point of view, recognizing a branch on the British territory apparently would raise some practical problems in collecting detailed data on its activity. On the other hand ONS need to know the import of the extraction service. In the case of Norway, the requested information is collected from a joint survey between Statistics Norway and the Norwegian Petrol Directorate (census of all units involved in oil and gas activities). The information is broken down by oil field.

3.2.2. Case 2 – Australia and Timor Sea

42. For many years, the Timor Sea has been the subject of claims between Indonesia (and now Timor-Leste) and Australia concerning the location of the seabed boundary between the two countries. Significant economic activity, in particular the development of petroleum deposits, is now taking place in an area subject to these claims. While part of the boundary was agreed in 1971 and 1972, a gap remained (which subsequently became known as the 'Timor Gap'), opposite what was then Portuguese Timor.

43. In 1989, the Indonesian and Australian governments signed the Timor Gap Treaty. This treaty, which entered into force in 1991, split the affected area, named the Zone of Cooperation, into three parts: Area A (joint jurisdiction between Australia and Indonesia administered by a Joint Authority); Area B (Australian jurisdiction); and Area C (Indonesian jurisdiction).

44. After Timor-Leste's separation from Indonesia in 1999, a series of interim arrangements extended the operation of the terms of the Timor Gap Treaty with the United Nations Transitional Administration in East Timor (UNTAET) taking on most of Indonesia's rights and obligations. On 20 May 2002, the newly independent Timor-Leste and Australia signed the Timor Sea Treaty (the Treaty), which entered into force on 2 April 2003. The Treaty provides the basis for the development of the major oil and gas deposits in the Timor Sea between Australia and Timor-Leste in the area covered by Area A—renamed in the Treaty as the Joint Petroleum Development Area (JPDA). The Treaty states that exploration and production activity in the JPDA is to be administered by an authority, the Designated Authority, established by the Australian and Timor-Lestese governments.

45. The Treaty² outlines agreement on a range of issues including administration of the area and the way in which taxation and resource royalty flows from the petroleum production will be distributed between the two countries. However, the Treaty does not address the issue of sovereign rights over the seabed in the Timor Sea and no maritime boundary between the countries has been established.

² For more information about the Timor Sea Treaty, see Australian Bureau of Statistics: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5206.0Feature%20Article34Sep%202003?op=endocument&tabname=Summary&prodno=5206.0&issue=Sep%202003&num=&view=>

46. The treaty arrangements between Australia and Timor-Leste referred to in this section reflect the understanding of the ABS of the Treaty's statistical implications and are presented to place the statistical treatment described in context.

The statistical concepts of economic territory and residence

47. In measuring the economic activity of each country a logical sequence is followed to determine what economic activity should be attributed to each country. The sequence is to:

- split the world into discrete economic territories
- assign residence for all individuals, businesses, governments and other organisations (referred to as economic units) to specific economic territories
- calculate the economic activity of an economic territory as the sum of the activity of all economic units assigned residence in that economic territory.

48. A key feature in this sequence is that each economic unit can have residence in only one economic territory.

49. In general, the first step can be relatively easily determined using established political boundaries. The second step is straightforward for the majority of units and conventions have been developed to deal with more complex cases (for example the treatment of multinational corporations).

50. The situation in the Timor Sea is not straightforward since there is no defined political or maritime boundary that can be used in the determination of economic territory. Indeed, since both Australia and Timor-Leste claim sovereign rights over 100% of the JPDA seabed, a definition following political boundaries would result in overlapping economic territories and a double counting of economic activity. In view of the claims over the JPDA seabed, for statistical purposes it has been decided to treat the JPDA as being part of the economic territory of both Australia and Timor-Leste, rather than allocate the area exclusively to one country.

51. In other words, the JPDA is to be treated as a multi-jurisdictional area, without either country having a predominant claim from a jurisdictional perspective. Importantly, there is no implied or notional allocation of economic territory between the two countries. Should a delimitation of a maritime boundary be made in the future the allocation of economic territory would become clear. Once a boundary is in place, the economic activity of each country would depend primarily on the location of the producing units in relation to the boundary.

52. An alternative approach that would avoid the need for any specific allocation of the production in the JPDA is to consider that the area is international waters - i.e. that it is no specific country's economic territory. In such cases the economic activity is attributed to the economic territory in which the unit undertaking the activity is resident. In this case however, it is clear that both Timor-Leste and Australia consider themselves to hold sovereign rights over the seabed to the exclusion of all other countries. This being the case, the treatment of the JPDA as international waters would not be appropriate.

Economic activity in the Timor Sea and Australia's Economic Statistics

53. In recording Timor Sea economic activity in Australia's economic statistics each aspect, e.g. production, income and net worth, must be considered separately with a focus on the particular units involved and the underlying economic measurement principles. The following sections outline the measurement implications for each aspect. Because different considerations need to be taken into account for each aspect, there are differences in allocation between measures of production, income and net worth. This is a reflection of the fact that a clear delineation of economic territory, which is normally taken for granted, does not exist in this case. Importantly though, there is coherence across the different aspects of economic activity because of the use of common underlying principles.

Measurement of production

54. The measurement of production covers the measurement of GDP and its components, including the value of output, gross fixed capital formation, imports and exports, compensation of employees and gross operating surplus. In the national accounts, production is allocated to the country in whose economic territory the production takes place. For this reason the production of an American-owned company operating in Australia is recorded as Australian production even though a proportion of the income from that production will ultimately flow to the United States.

55. For the reasons described above, the JPDA is treated as multi-jurisdictional for the purposes of Australia's economic statistics. Thus, production in the JPDA has to be allocated between Australia and Timor-Leste. Given that neither country has ceded sovereign rights over the JPDA it is considered that, on balance, production should be allocated 50:50 between Australia and Timor-Leste. This reflects the allocation of production in the national accounts on a jurisdictional basis rather than in terms of the ultimate beneficiary of any income flow from the production. In practice, this is achieved by treating all units operating within the area as consisting of two nominal entities—one with residence in the economic territory of Timor-Leste and one with residence in the economic territory of Australia.

56. One impact of this approach is that there will be a range of international flows recorded between the two countries that would not have been estimated had the JPDA been treated as the economic territory of solely Australia or Timor-Leste. For example, suppose an entity operating in the JPDA employs people who are residents of Australia. In this case 50% of the wages paid would be treated as payments by an Australian entity to Australian residents and the other 50% of the wages would be treated as payments by a Timor-Lestese entity to Australian residents - a flow that is captured in the balance of payments. These and other production related flows can be measured and recorded following standard principles.

57. An exception to the allocation of production on a 50:50 basis concerns the pipeline under development between the JPDA and the Northern Territory. In this case the pipeline is not considered to be part of the multi-jurisdictional area covered by the JPDA but is under the jurisdiction of Australia. Hence the economic territory can be clearly defined as Australian and the activity associated with the construction of the pipeline and the output from the pipeline itself can be allocated 100% to Australia.

Measurement of income

58. In the measurement of production some elements of income are covered. These are compensation of employees, gross operating surplus and taxes less subsidies on production and imports. Although these items form the largest part of a country's income, there are other relevant income flows that must be considered. These include flows of interest, dividends, rent on natural assets (commonly referred to as royalties with respect to mineral deposits) and taxation other than taxation on production and imports. In order to measure a country's gross national income and its gross disposable income, as distinct from its GDP, it is necessary to take into account these income flows between the country and the rest of the world.

59. The Treaty defines how the resource royalty and taxation income flows relating to the JPDA are to be apportioned between the two countries. For resource royalties, 90% are payable to the Timor-Lestese government and 10% to the Australian government. For taxation, in general, Australia applies its tax system to 10% of income earned in the JPDA and Timor-Leste applies its tax system to 90% of the income earned in the JPDA. These proportions are applied to the relevant activities of each conceptual entity in order to estimate the income transactions between Australia and Timor-Leste that are recorded in the balance of payments.

60. The final income result for each country is unaffected by the decisions relating to economic territory, residence and production in respect of the JPDA. At the same time, changes to the Treaty which affect the allocation of resource royalty and taxation flows between the countries will not

affect the measured production of each country. Both of these outcomes are sound from an economic measurement perspective.

Balance sheet measurement

61. A proportion of the sub-seabed petroleum deposits in the JPDA need to be recorded on the national balance sheet of each country. Since the JPDA is considered a multi-jurisdictional area, the petroleum deposits are, in effect, jointly owned by the Australian government. In Australia, all sub-soil assets are deemed to be owned by the general government sector and the Timor-Lestese owner. Without a precise delineation of economic territory within the JPDA there can be no specific attribution of the petroleum deposits to each country. Further, there is no direct link to the allocation of production activity as defined above. This is consistent with the treatment of general mining operations in Australia where the business undertaking the extraction of the resource has no direct ownership of the resource itself. The estimation of production and net worth are therefore related but independent considerations.

62. The value of assets within the JPDA will depend, as with all assets, on the future income stream that will accrue to the owner of the asset. For the Australian government the future income stream from its ownership of the mineral resources is directly related to the value of future resource royalty flows. As it will receive 10% of these flows then 10% of the total value of the petroleum deposits in the JPDA will be recorded in the Australian balance sheets.

63. No consideration has been given to any other natural resource assets which may be present within the JPDA. The allocation of the value of any other assets in the JPDA between Australia and Timor-Leste would need to be considered separately.

Treatment of the Designated Authority

64. The primary purpose of the Designated Authority is to act as an agent for each government and channels funds (mainly royalty payments) to the Australian and Timor-Lestese governments. For the purposes of economic statistics the Designated Authority is considered to be operating in the JPDA itself and hence its residency should be split 50:50 between Australia and East Timor. The two conceptual entities will then be shown to transact with Australia, Timor-Leste and the rest of the world according to standard principles.

3.3 Cross border pipelines

3.3.1 Case 1 - Norway

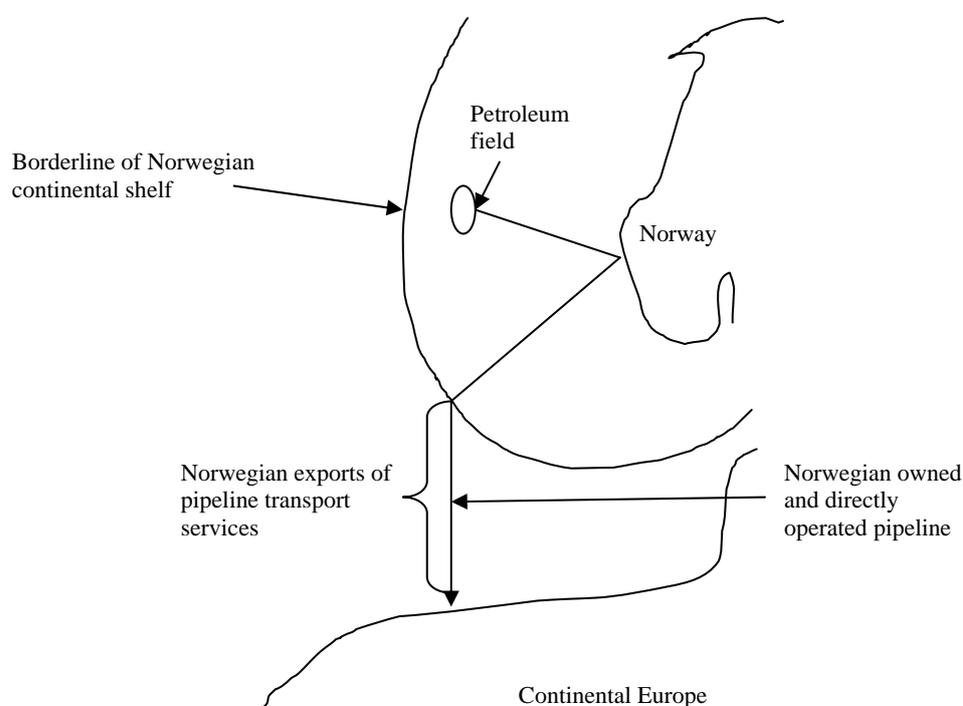
65. Crude oil and natural gas are transported from Norwegian petroleum fields in the North Sea to ashore in both UK and other North Sea continental countries. Larger parts of these pipelines are located on other countries' continental shelves. The pipelines are, however, for most part owned and operated by Norwegian companies. This is an example of a multiterritory pipeline that passes through a territory, but is not operated by a separate legal entity in that territory.

66. According to the discussion in 2.2.2 the pipeline should be recognized as constituting a branch if there are substantial operations over a significant period and availability of separate accounts. In this specific case there is no substantial presence and no information available to set up separate accounts for the different territories outside Norway. Also allocating production etc to the territories by prorating is difficult as no suitable prorating factor exists. Therefore, agreements are made with the respective countries that the value added generated by transporting the petroleum to the shores of the other North Sea countries are to be recorded as part of the Norwegian GDP and are included in its exports. The first agreement on this recording was entered with the UK in 1974.

67. Historically, the solution was chosen for practical reasons, as necessary statistics must be collected from the Norwegian enterprises operating the transportation systems, an option that the

statistical authorities of the other countries for legal reasons do not have. However, the chosen recording also is based on the difficulties in developing complete financial statements, including a balance sheet, and so the chosen treatment is in accordance with the recommendations in BPM6 4.31-4.33.

Figure 4: Sub-sea pipeline transport system in the North Sea



68. The above figure illustrates these circumstances. Pipeline services involving Norwegian-owned pipelines located on foreign countries' continental shelves are recorded as Norwegian output and as Norwegian exports to the countries receiving the petroleum. This is an example where, rather than creating a notional direct investment enterprise in the territory where economic activities of a permanent nature are performed, the economic flows are regarded as exports by the country (Norway) that owns the pipeline. As noted, this treatment is consistent with BPM6 paragraphs 4.31-4.33, due to difficulties in developing complete financial statements for the pipelines.

3.3.2 Case 2 – Italy

69. Bank of Italy identifies exports of pipeline transportation services in the Italian Balance of Payments. The exports represent the payments made by Tunisian enterprises for the transport of gas through a pipeline owned by an Italian enterprise. The pipeline is mainly used to transport gas from Algeria to Italy, and since it passes through the Tunisian territory it is used also to transport gas from Algeria to Tunisia. The Italian enterprise owning the pipeline has not a separate legal entity for this activity of transport of gas from Algeria to Tunisia and, according to the enterprise, separate accounts are not available. It follows that the pipeline can not be recognized as constituting a branch and that the provision of transport services to Tunisian enterprises has to be registered as exports of services (BPM6 4.33). On the basis of this information, the registration principle followed by the Bank of Italy is consistent with the recommendations and is also analogous to the Norwegian way of recording the pipelines production.

70. It can be argued that an interpretation of the criteria suggested by BPM6 for prorating in case of multiterritory enterprises could represent an alternative method. However, since it is difficult to find good prorating factors, this recording seems less favourable.

3.4 Mobile capital - ocean transport

71. At first glance, statistical treatment of international maritime transport activities can appear problematic. The following quotation from a Norwegian newspaper may serve as an illustration:

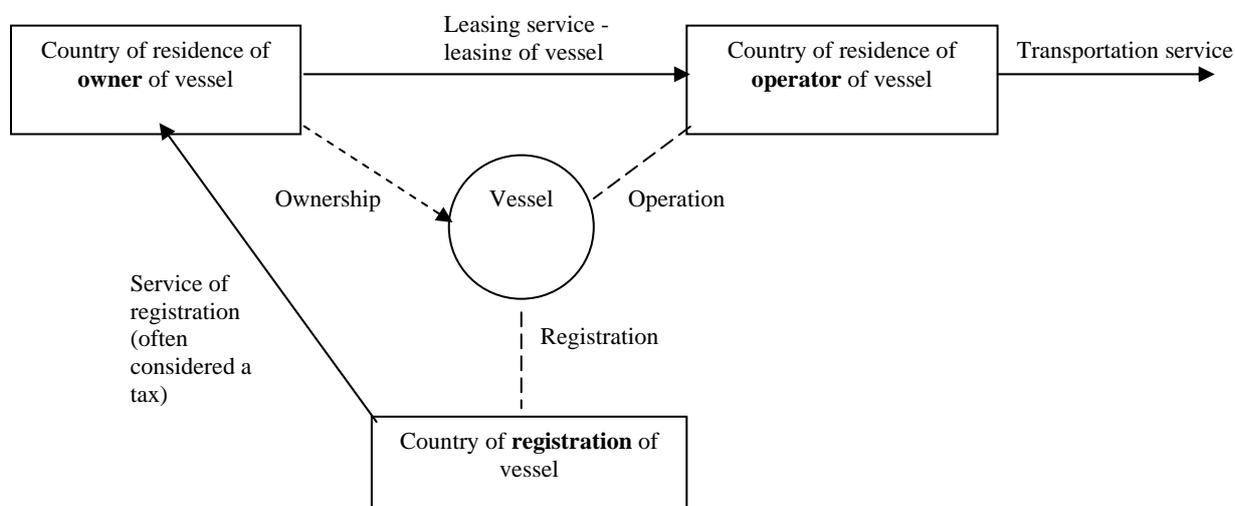
72. "The Norwegian shipping company X in Bergen recently sold 10 ships to an Arabian company Y. The ships are to be registered in Liberia. The company X has entered a management contract with company Y. The ships will, however, be operated by the (Norwegian) company Z."

73. This example illustrates the difficulties in allocating to various involved countries the activities performed using mobile production capital. Ocean maritime transport is an international service activity in more than one sense, and can appear hard to grasp in statistical terms. The transport activity itself takes place in several countries' economic territories, or even outside any country's economic territory, i.e., in international waters.

74. Due to complex organizational structures and operating arrangements, it can be difficult to identify which institutional unit (and, consequently, which country) is the producer of a specific transport service. In international shipping, a vessel usually travels outside the territory of the unit operating the vessel. Furthermore the owner of the vessel quite often is resident of another country than the operator of the vessel, and finally the vessel itself may very well be registered in a third country (see figure 5). Thus, ocean transport involves enterprises operating on many economic territories.

75. Some decades back, the country of registration, the country of ownership, and the country of operation of a ship were all one and the same. For various reasons, this is rarely the case today. As illustrated by the example described above, it is not unusual for at least three different countries to be involved.

Figure 5: Ocean maritime transport. Multinational organisation



76. A main challenge is to determine which country is the producer of the individual transport service. Here, at least two fundamental problems should be addressed. First, how should maritime transport services be separated from other types of services? During the last decades we have observed a growing trend of contracting-out from traditional shipping companies. The economic crisis in the shipping industry starting in the mid-70s, forced many Norwegian shipping companies to sell their fleet, while others went bankrupt. What remained was basically the knowledge of maritime operations. This led to the establishment of specialized enterprises, so-called ship management companies, producing a set of services related to shipping on a contractual basis.

77. This development has made statistical recording of maritime transport services somewhat more difficult than before, by blurring the borderline between maritime transport activities and other business service activities. The dispersion of ship management functions and ownership can even make it difficult to identify the statistical unit producing the transport service itself.

78. Even in the circumstance where it is clear who owns the vessel, who produces the transport services, and where the owner and operator of the vessel reside, it may nonetheless still be challenging to compile data consistent with preferred statistical methodologies. This is because it can be difficult to adjust datasets that may be based on commercial or regulatory reporting needs to fit statistical compilation purposes.

79. A consistent and comprehensive statistical treatment of the services requires identifying the production units involved, and this may be best accomplished through development of a business register. To support this task, operational criteria for distinguishing the various types of services producers need to be defined.

80. The second issue is that the trend toward increasing internationalisation of the shipping industry has highlighted some questions of residency. To which country should we allocate the production and hence the export of shipping services? And to which country should the ships themselves, in their capacity as mobile capital engaged in the production of ocean transport services, be recorded?

81. One statistical principle is that it is the operator, i.e., the enterprise operating the specific vessel, which is the producer of the transport service. Thus, in principle, the allocation of the transportation activity should be based on the country in which the operator of the vessel is resident. That is the country in which the operator's predominant centre of economic interest is (BPM6 4.136).

82. Also in regard to the individual vessel, it is important to stress that the vessel itself is not an economic agent or institutional unit, but rather production capital owned and operated by economic agents. The country of residence of the owner of the vessel determines on whose national balance sheet the value of the vessel should be recorded. The country of registration is not relevant in identifying the country of the owner or the country of the operator of the vessel. The economic link between the country of registration and country of ownership of the vessel is that a registration "service"³ is rendered from the former and this registration "service" should be recorded as a cost of the latter.

83. The international shipping industry is sometimes organised in a rather non-transparent way, and in many cases it is a demanding task to reveal the actual owner of a vessel. In practice one may need to accept formal ownership, i.e., the ownership revealed through shipping registers. Statistical compilation is complicated also because lease agreements and registers may not reflect economic ownership. It is important to identify the actual owner of a vessel to accurately record exports and imports of vessels, and it is important to identify the operator because this determines the geographic allocation of the transport service produced.

Non-resident sailors on Norwegian ships

84. On board Norwegian owned and/or operated ships today we find about 45.000 sailors. Two questions must be answered. How many are employed by the Norwegian shipping enterprises? And, how many of these are non-residents?

85. In the Norwegian national accounts up to 1995, all sailors on vessels operated by Norwegian shipping companies were regarded and treated as residents of Norway, i.e., belonging to the domestic household sector. Based on information of nationality of the sailors, two flows were estimated in the balance of payments and the national accounts. Part of the compensation of employees paid to the sailors of foreign nationality was assumed being spent by the sailors when on shore in foreign ports and therefore recorded as part of travel expenditures debit (or imports). The

³ In the case where the registration fee is provided for little or no work on the part of government, the fee should be considered as a tax (BPM6 10.180).

other part of the compensation received by the foreign employees was assumed sent to their home countries and therefore recorded as transfers to abroad (remittances).

86. These recordings were changed in 1995 when the 1993 SNA was implemented in the Norwegian balance of payments and national accounts. As from then, the sailors of foreign nationality on board ships operated by Norwegian shipping companies were treated as non-residents, and the compensation of employees recorded as a flow to abroad; this treatment is also in accordance with the recommendations in the 2008 SNA (para 26.38 c). For example sailors from Philippines, working on Norwegian operated vessels, are classified as Philippinean residents that receive employee compensation from Norway.

87. Another question to be answered is whether all sailors on board are to be treated as part of Norwegian employment (but non-residents), or whether some of them in fact are employed by foreign enterprises and leased to the Norwegian shipping companies. If the latter, the payments are to be recorded as imports of employee leasing services and not as compensation of employees to abroad. Due to the lack of information, this has however not yet been implemented in the Norwegian national accounts and balance of payments, and at present all sailors on Norwegian operated vessels are treated as Norwegian employees.

88. Data on the number of employees, and, of them, the number of those who are non-residents, are collected partly from administrative registers and partly from The Norwegian Shipowners' Association.

3.5 Unincorporated joint ventures and mobile capital – the case of SAS

89. There are institutional units, for which it is difficult or unreasonable to determine one unambiguous country of residence. The reason is that the economic activities of the units are performed on two or more countries' territories and the activities are organised in such a way that it is impossible to identify, either real or notional, separate institutional units (affiliates) in each of the countries involved. In such cases the activity is allocated to the countries in accordance with their ownership to the activity. The primary example of this case probably is the Scandinavian Airline System (SAS).

90. Ever since its establishment as a multinational consortium, SAS has been a Scandinavian cooperation, with strong involvement from the Swedish, Danish and Norwegian governments. The consortium agreement of 1951 established the following ownership shares: Sweden 3/7, and Denmark and Norway 2/7 each. The government ownership is organised through national enterprises with 50 per cent central government ownership share. The agreement was the fundament of the joint aviation policy of the Scandinavian countries.

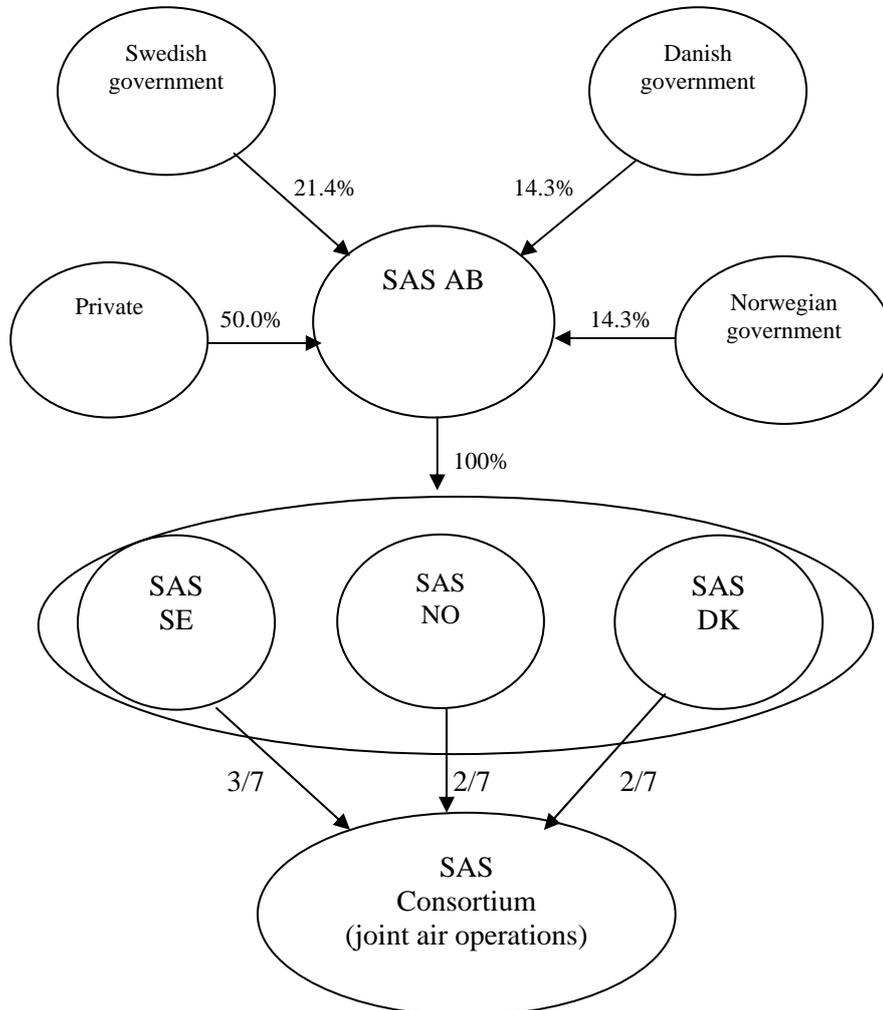
91. The agreement laid down the operational principles of the joint aviation activity and established its limits. It also governed the registration of airplanes in the three countries to be in accordance with their ownership shares. According to the agreement, SAS is to perform all air services and aviation activities on behalf of the national owner companies, which act solely as owners. The national owner companies do not perform any aviation activities.

92. The national accounts and balance of payments statistics in the three countries follow the same rules of recording of the SAS. Both capital stocks and transactions are prorated to the respective countries in accordance to their ownership shares. The consequence is that the Norwegian national accounts include some activities that on permanent basis are operated and performed outside the economic territory (similar to the treatment of offshore pipelines – see section 3.3).

93. Since 1999 SAS, has been restructured several times to adapt to changing economic and political environments. In 2004 SAS was re-organized and 3 national operating companies (including SAS Norway) were separated from the joint SAS consortium. However, the re-organization did not change the principles of the recording of the joint SAS consortium unit in the national accounts, only the size of the unit to be distributed between the three countries was affected.

In 2009 the organization process was reversed by merging the 3 national SAS companies into the SAS consortium.

Figure 6. Ownership structure SAS



94. The challenge is to single out one country for the allocation of economic activities of units described in the paragraph. According to the guidelines, three criteria must be fulfilled to meet the requirements of such a special case:

1. The production must take place using mobile equipment, implying that production using stationary fixed capital falls outside the scope of the special case. SAS, as an aviation company conducting international air operations, clearly must be regarded as meeting the first criterion.
2. The unit must be founded by joint legislation of two or more governments. It seems plausible to assume that underlying reasoning is that such a close governmental cooperation in this policy area implies joint operations. SAS was founded and is operated to meet joint Scandinavian policy objectives within the aviation sector. Also the second criterion must thus be regarded as met.
3. The unit must be registered in all involved countries, underlining the objective of joint governmental control over the activities. If the unit in question is registered in one of the countries only, this could be used to determine the country allocation of the activities. The three national ownership companies related to SAS were registered in each

of the three countries, reflecting the policy objectives of joint governmental control, and thus the third criterion is also met.

95. For cases meeting these three criteria, the international guidelines suggest two alternative treatments in the national accounts and balance of payments:

- a) All transactions (and positions) are allocated to each country according to their share of corporate equity; or
- b) The unit (and all its transactions and positions) is allocated to the country where its headquarters is located. Units in the other countries are treated as direct investment enterprises.

96. SNA recommends the second treatment, admitting however that practical considerations may result in choosing the first treatment. The most important aspect is to seek consistency in treatment in the statistics of the countries involved.

97. In the case of SAS, the first treatment was chosen, reasoning that SAS produces international air transport services and at the same time serves as an instrument for the exercise of joint inter governmental policy in the aviation area. Also, it is organised and operated in a way that makes it extremely difficult to single out one single country in the geographical allocation of production and capital.

The compilation in practice: SAS airlines-company case

98. The Airline Company SAS is owned and operates on a permanent basis in Norway, Sweden and Denmark. The new enterprise is half owned by private investors and half owned by the central governments of the three countries. Sweden controls 3/7 of the state-owned part, and Norway and Denmark own 2/7 each.

99. With the purpose of allocating the production, export, and import figures of this company by country, the national statistical offices (NSOs) in the three countries agreed to treat SAS's data as follows:

- Of the total production of the company, 3/7 parts belongs to Sweden and 2/7 parts to Norway and Denmark each. The same rule is applied in the treatment of the intermediate consumption, the gross fixed capital formation, and the financial transactions;
- A special survey is conducted in Sweden. This survey collects information on the operating incomes and the costs of the airline activity and the balance sheet on a quarterly basis;
- In order to calculate the export and the import figures, the incomes in the survey are broken down into sales to units in each of the three countries and to others. In the same way the costs are broken down into purchases from units located in each of the three countries and from others;
- The data is collected by the NSO in Sweden and the fulfilled survey is then sent to the NSOs in Norway and Denmark.

100. Thus the NSOs in the three countries have the necessary information to calculate the production, export, and the import figures that pertain to the activity of the company.

Calculations in Sweden

101. The production in Sweden, named as country A in the tables, equals, as mentioned before, 3/7 parts of the total incomes of the company. The exports equal the production minus the sales to units in Sweden. The intermediate consumption and imports in Sweden are then estimated. The intermediate consumption equals 3/7 parts of the total costs and the imports are calculated as the difference between the intermediate consumption in Sweden and the purchases from units in Sweden. The following table shows how the model works in practice:

Table 1: Airline company. Calculation of the production and the exports in country A⁴

	a)	b)	c)	d)
	Company's Income	Sales to units in country A	Produktion in country A	Exports in country A
<i>source</i>	<i>survey</i>	<i>survey</i>	$3/7 * a)$	$c) - b)$
Passenger	700	200	300	100
Freight	280	50	120	70
Other traffic revenues	140	55	60	5
Aircrafts rental	350	130	150	20
Engineering services	70	28	30	2
Ground services	70	10	30	20

Table 2: Airline company. Calculation of the intermediate consumption and the imports in country A⁵

	a)	b)	c)	d)
	Company's Costs	Purchases from units in country A	Intermediate consumption in country A	Imports in country A
<i>source</i>	<i>survey</i>	<i>survey</i>	$3/7 * a)$	$c) - b)$
Airport and aviation charges	140	50	60	10
Fuel and lubricants	350	50	150	100
Catering costs	35	10	15	5
Aircrafts rental	280	75	120	45
Engineering services	245	28	105	77
Ground services	70	10	30	20

Import and export of aircrafts:

102. In order to calculate exports, imports, and capital formation, data about purchases and sales of aircrafts are needed. Information about the nationality of the counterpart is also required to assign the correct amounts to each trading partner country. As in the previous example, the data are collected by the NSO in Sweden and then sent to the NSOs in Denmark and Norway (named as countries B and C in the tables).

103. The same principle as in the production, export, and import calculations above is followed. The 3/7 parts of the value of the aircrafts that are registered in the balance sheet of the company belong to Sweden, no matter in which country the aircraft is registered. Denmark and Norway own 2/7 parts of the aircraft each. The CSO in Sweden gets the information when the purchase or the sale of an aircraft is registered in the balance sheet of the company. The following tables show how the transactions are recorded in the NA in the countries depending on the nationality of the counterpart.

⁴ The figures in the following table are not the real figures reported by the company.

⁵ The figures in the following table are not the real figures reported by the company

Example 1: purchase of an aircraft by Company A

Vau e of the aircraft = 700		700							
	Country A			Country B			Country C		
	Export	Import	C.F.*	Export	Import	C.F.*	Export	Import	C.F.*
Aircraft sold by a company in a third country			300	300	200	200	200	200	
Aircraft sold by a company in country A	400		-400		200	200	200	200	
Aircraft sold by a company in country B		300	300	500		-500		200	200
Aircraft sold by a company in country C			300	300	200	200	500		-500

* C.F. Capital Formation

Example 2: sale of an aircraft by Company A

Vau e of the aircraft = 700		700							
	Country A			Country B			Country C		
	Export	Import	C.F.*	Export	Import	C.F.*	Export	Import	C.F.*
Aircraft sold to a company in a third country	300		-300	200		-200	200		-200
Aircraft sold to a company in country A		400	400	200		-200	200		-200
Aircraft sold to a company in country B		300	-300		500	500	200		-200
Aircraft sold to a company in country C			300	200		-200		500	500

* C.F. Capital Formation

Financial transactions

104. The prorating based on the ownership rates is also applied to the financial transactions.

4. Challenges with regard to source statistics

105. Challenges with regard to multiterritory enterprises are mainly related to the prorating of the operations in different territories according to an appropriate enterprise specific indicator, if the possibilities to set up legal institutional units are absent. The purpose of proration is to achieve approximately the same result as if data were reported by the enterprise itself. The SNA/BPM leave it to the statisticians to devise methods that are appropriate to the circumstances encountered.

Surveys

106. The factor used for prorating should be based on available information that reflects the contribution to actual operations, but such information often is not easily available and sometimes compilers will have to ask the enterprises involved; i.e., conduct sample surveys which are specially designed for this purpose.

107. If the taxation authorities have accepted the multiterritory arrangements, a prorating formula may have been determined that could be the starting point for statistical purposes. However, such taxation information can be difficult to obtain or to exchange between countries.

108. It is clear that the prorating treatment is complex to implement and has implications for other statistics. It should be coordinated for consistency. Thus, compilers across countries involved in multiterritory enterprises should cooperate to develop consistent data, and avoid data gaps.

109. At the same time statistical agencies across countries have been increasingly concerned about respondent and compilation burden, and have taken steps to minimize these. An example on international cooperation is given in the SAS-airline case (see section 3.5). Here, Statistics Sweden conducts a special survey and shares the results with the other countries involved. The examples in sections 3.2 and 3.3 on cross border natural resources and pipelines are examples of cooperation between national statistical agencies.

110. Sample surveys have merit compared to administrative data in that they can be designed to include the relevant questions related to the prorating of multiterritory enterprises. The disadvantage

is, however, that they increase the respondent burden. A possibility is to combine administrative data with a survey where only the most substantive questions are covered by the survey.

Administrative data sources

111. As a way of reducing the response burden, many statistical agencies use administrative data in their compilation of the national accounts. The challenges with regard to administrative data are that they normally are set up for legal or other administrative purposes and are not designed to answer questions that the national accounts and balance of payment compiler have. If one uses tax records, particular attention should be paid both to the risk of overestimating domestic value added as well as the risk of double accounting the activities across the borders. An example of the measurement problem when using tax records is given in section 3.1. Such measurement problems must be solved through direct contact with the companies involved with instructions on how to report data for statistical purposes.

A significant problem?

112. Regardless of the statistical data sources employed, proration is resource intensive work for statisticians. If the incidence of proration is increasing because more activity is undertaken globally, then the workload of statisticians will increase, and the accuracy of the results could be questioned, because proration implies a degree of judgement (such as in determining the variable(s) to use for proration).

113. How significant is the problem with multiterritory enterprises and the other types of activities described above? Most international operations of multinationals are formally organised as corporations or branches, and governments can usually routinely collect relevant data from them for statistical purposes. However, for small open economies, and for some countries that participate in customs and currency unions, multiterritory enterprises may be sizable and can create compilation challenges. Hence, recommendations on how to compile and prorate these enterprises are of importance, even though the number of units in many countries may be limited.

5. Recommendations

114. To be able to compile data on multiterritory units in a comprehensive and consistent way statistical offices should:

- Allocate sufficient resources to do case studies (to get an overview of challenges and measurement issues)
- Where appropriate, special surveys should be conducted for tracking multiterritory enterprises, and for use in developing prorating factors
- Administrative data can be used in combination with special surveys
- Best practices in survey design should be shared among statistical agencies
- Compilers in different countries should try to share data with one another to develop consistent data and avoid data gaps.

115. Measurement problems may be mitigated through either new methods and/or enhancing existing methods with better data sources. To achieve this, additional resources may be needed in the statistical agencies.