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Agriculture and fishing activities in the Pacific – the special classification needs of small island economies

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Riassunto: In fragile economies it is vital that planners have access to an appropriately detailed level of reliable information. This is true in particular for industries such as agriculture and fishing, where factors such as economic pressures and rapidly changing technologies have the potential to destroy delicate balances if changes are not managed well. However, the level of detail available is governed by the classifications used in the collection of the source data. A potential problem here is that international classifications are strongly influenced by highly developed economies that dominate global GDP and which tend to have very different characteristics from most Pacific Island economies. This paper aims to demonstrate the need for a regional classification of agricultural and fishing activities in the Pacific, and so question generally whether there should be more special purpose classifications.

Keywords: Fishing, Agriculture, Classifications, Pacific, Islands, PICT, Region

B. 1. INTRODUCTION

Irrespective of their size or stage of development, individual countries and territories throughout the world possess some specific characteristics that differentiate them from other countries and territories. Further, when countries and territories are grouped into "regions" the same situation applies – each region possesses some characteristics which differ noticeably from those of other regions. This national and regional heterogeneity represents an enormous challenge for the statisticians developing international classifications: how to account as fully as possible for global diversity, but to do so in a manageable framework? The nature of this problem is such that there will always be instances where "international standards" fall short of the ideal for more narrowly-defined

studies such as, in the context of this paper, detailed research relating to Pacific[1] island countries and territories (PICTs). But does this imply that international standards are somehow inadequate, or is it simply that we need to develop additional special purpose tools? This paper aims to support the latter interpretation.

It is not being suggested that the Pacific is any "more unique" than other regions, nor that international classifications should be changed to better reflect our needs. Rather, this paper aims to explore the special classification needs of the Pacific for agricultural and fishing activities, and thereby illustrate the need for "regional" classifications which can be used to supplement international classifications and so help to improve the consistency and comparability of work done throughout any particular region.

2. The use of classifications in Pacific statistics

In preparing for any study involving statistics the general question should always be asked: are international standard classifications and concepts relevant for the purpose of the exercise? Clearly, there are immediate advantages for using existing classifications: international comparability, ready availability of well-defined concepts, and easy access to expert advice are some that spring readily to mind. But the advantages of using existing classifications need also to be weighed against the alternative benefits of using measures specific to the needs of each study. This issue can also be viewed from a regional perspective – is there sufficient commonality in studies being done throughout a region to justify the development of classifications specific to that region?

Let us consider the *International Standard Industrial Classification of All Economic Activities* (ISIC) as a test case. The latest version of ISIC was released by the UN in 1990, it has 292 component "classes" of economic activity, and its development by the UN Statistics Division involved extensive consultation with expert statisticians throughout the world. Nevertheless, it is inevitable that the sort of global decisions that underlie developments such as ISIC require at least some degree of compromise. An obvious concern for regions with a relatively small contribution to the global economy is that "international" standards may not accurately reflect their own circumstances.

Indeed, the need to sometimes adapt international classifications for other purposes is often recognised by the classifications themselves. For example, the notes to the 3rd revision of the ISIC include Chapter III: *Application of the classification,* with separate sections dealing with this issue: *B. Use of ISIC in establishing related national classifications*, and *C. Expansion or contraction of ISIC*. It is only a short step from developing national classifications to developing regional ones.

[1] The term "Pacific" is often used very loosely to describe a range of countries and territories in the Central and Western Pacific. In this paper it is used to refer to the 22 Pacific Island Countries and Territories (PICTs) who are members of the Pacific Community, their EEZs and the adjacent high seas areas.

There are a number of factors which suggest that agricultural and fishing activities in the Pacific may need additional work on their systems of classification:

- agriculture and fishing are dominant sectors of many PICT economies, far more so than in many other regions
- there have been many diverse studies involving agriculture and fishing in the Pacific, and there is no indication that this will change
- agriculture and fishing seem to be relatively poorly served by existing classifications such as ISIC.

II. 3. The importance of agriculture and fishing activities in the Pacific

The Pacific is a large region physically, and with some quite striking characteristics. One of these is that agriculture and fishing are a far more dominant feature of most PICT economies than they are in larger, more developed economies. For example, Australia has a huge landmass and vast shoreline but *Agriculture, forestry and fishing* activities accounted for only 3% of its total GDP in 2000. The most recent comparable PICT data is for Samoa, where *Agriculture, forestry and fishing* activities accounted for over 17% of GDP in 2000. Even though the Samoan economy has experienced several years of very strong growth in its services sector, the agriculture and fishing share of GDP is still six times as important in Samoa as it is in Australia. And that is measuring its relative importance only in monetary terms, it does not make any allowance for the very significant cultural and social importance attached to traditional food production and consumption.

There are many other striking examples of these differences – Kiribati has an EEZ roughly the size of mainland USA, but has a population of only 91,000 people living on 811 square kilometers and consuming on average over 180kg of tuna per annum. Fishing activities alone account for over 25% of Palau's total GDP. The value of the Western Pacific tuna catch is around US$2 billion annually, equivalent to more than 10% of the combined GDP of all the countries in the region. At the height of its production, the tuna canning industry (manufacturing, but fishing-related) in American Samoa supplied 70% of the USA market for canned tuna and employed 5,000 people, around 8% of American Samoa's entire population. Agriculture and fishing in combination account for over 20% of GDP in many PICTs. These are just a few examples highlighting the importance of fishing and agriculture to the region, as well as it's somewhat unusual geography and structure.

Given the sorts of relativities outlined above it is clear that the current classification by ISIC of *Agriculture, forestry and fishing* activities does not reflect the economic structure of a typical PICT. One simple example: in ISIC all fishing activities are classified to a single class (*0500, Fishing*), representing just 0.3% of the 292 classes allocated. (The previous version of ISIC did have two classes for *Fishing and related activities,* but these

were collapsed into a single class with the introduction of Revision 3.) Agriculture is slightly better served with four individual classes, but this is still clearly insufficient for PICT-oriented research and analysis. The fact that ISIC has evolved into its present form implies that larger, developed economies do not need more detailed industry classifications for fishing and agriculture. This situation is unlikely to change, so it would be unwise for the PICTs to sit back and hope that ISIC will evolve of its own accord into something better suited to their needs.

III. 4. Classification of agriculture and fishing activities in the Pacific

Most agricultural censuses and surveys in the Pacific have been essentially commodity-based, with little or no attempt to classify producing units to a predominant activity. But there are often very large differences in the nature of the activities underlying the production of the different crops. If one were to classify Pacific agricultural producers according to ISIC, analysts would quickly run into the problem that activities which are regarded locally as quite diverse would be classified within the same class. The same is true for fishing, although here at least many surveys have focused on particular types of producers, generally developing their own sub-classifications in the process. And, regrettably often, the various estimates of agriculture and fishing production have been combined into one aggregate for publication, something which has consistently frustrated analysts in the region who try to obtain data on one or both of these industries from publicly available databases.

Having said that ISIC does not fully serve the Pacific's needs for agricultural and fishing classifications, it is only fair to then put forward views on what those needs are. The following sections attempt to provide draft classifications that can be used as the basis for discussion throughout the region, leading hopefully to some form of a regional standard.

4.1 Classification of agricultural production in the Pacific

There are a number of major crops which are common throughout the Pacific region, and these can be used a starting point for suggesting which agricultural activities are deserving of separate classification.

Given the prevalence of coconuts throughout the Pacific, ISIC 0113: "*Growing of fruit, nuts, beverage and spice crops*" provides a good example of the need for further disaggregation. A family/producer with most of its agricultural effort aimed at a coconut plantation would be classified to the same ISIC class as would another producer whose main crop was citrus fruit, or pawpaws, or breadfruit, or avocados, all of which are important crops in certain PICTs. But the material inputs and growing techniques of these latter crops are different from each other as well as being significantly different from those of a coconut plantation, and so should be recorded separately in any exercise aimed at measuring structural relationships within the agriculture sector. If one were to aim for an industry classification for agricultural activity in a typical PICT it would seem sensible to break ISIC 0113 into a number of finer-level activities. (There would still be the ever-

present problem of classifying "mixed farming" units in such cases, but that is a separate issue.)

Another crop which is very important throughout the Pacific is taro, a high starch root crop. This is a very highly-valued food and is a dominant part of the staple diet of many Pacific Islanders. In 1994 Samoa was struck by the taro leaf blight and there was major national consternation – there was a severe disruption to national food supplies, with consumers having to adapt to the much less preferred ta'amu, supplemented by significantly increased imports of rice. (There was even a rumour circulating for a while that the blight had been introduced deliberately by rice importers – fortunately this was subsequently disproved.) The blight also led to major disturbances in the Samoan CPI, as taro by itself had a weight of over 5% and the price of the taro that was still available increased manyfold as the supply dwindled to nothing.

There is a story involving taro that is of some relevance here. When a very prominent Pacific Islander was young he consulted a British doctor about his diet. On hearing that taro was a prominent part of the patient's diet the doctor asked what "taro" was. When the patient replied that it was a vegetable the doctor encouraged him to eat as much of it as he liked as it would obviously be good for him. But given the very high starch content of taro, some vigorous adherence to the doctor's well-intended advice led to the patient gaining a great deal of weight very rapidly. The story has been told widely throughout the region, mainly as a humorous reflection on the lack of understanding of the Pacific, and it does illustrate two points of relevance to the classification debate. The first and more obvious one is that the knowledge and interpretations of international experts are not always appropriate for the Pacific. The second may reassure some of the classification experts: from a Pacific perspective ISIC appears to be entirely justified in its recommendation that "Roots and tubers with a high starch content" be separated out from *Class 0112: Vegetables.*

ISIC 0111, "*Growing of cereals and other crops n.e.c.*" provides another good example of the need to disaggregate for Pacific conditions. This class includes activities which are quite common throughout the Pacific but are as diverse as the growing of peanuts, tobacco, yams and sugar cane. In well-developed economies the growing of these crops is not sufficiently significant to justify the creation of separate industry classes, but in various PICTs one or more of these activities definitely deserve treatment in their own right. For example, an agricultural survey in Fiji would almost certainly want to differentiate between the operations of sugar cane producers and those of major taro growers. The two crops are grown and harvested in very different ways, and both are sufficiently major export earners to be of interest in their own right. But ISIC 0111 includes both of these activities in 0111 as "Roots and tubers with a high starch content" have been specifically excluded from *0112: Vegetables.*

As an initial suggestion for an appropriate level of disaggregation, the growing of the following crops is common to a range of PICTs, the techniques involved are extremely heterogeneous between groupings, and each is sufficiently important in at least one PICT to be worthy of separate classification. The draft classification aims for some hierarchical link to the existing ISIC.

01111 Growing of potatoes, yam, sweet potatoes, taro, and similar crops

01112 Growing of cereal crops (other than in 01111)

01121 Melons, squash, etc (of particular relevance for Tonga which supplies the Japanese market, most being used for tempura batter)

01122 Other vegetables eg, tomatoes, capsicums, cabbage

01131 Coconuts

01132 Citrus fruits

01133 Other fruits eg, pawpaw, breadfruit

01134 Sugar cane

01135 Beverage crops eg, coffee, cocoa beans

01136 Other crops, including spice crops eg, vanilla, ginger (and both of these have considerable importance in individual countries)

Looking at the farming of animals, the relevant ISIC class is 0122: "*Other animal farming, production of animal products n.e.c.*" An immediate limitation for Pacific farming is that this single class includes both pigs and poultry. Most PICTs have some organised poultry/egg production and ***every*** PICT has extensive pig farming, although much of it is relatively informal. Cattle farming is a major activity in only a few PICTs, but there are a number of countries trying to develop it and who would have a keen interest in separately identifying it in any agricultural survey. The differences between these activities suggest a need for separate classes of economic activity. Possibly:

Farming of cattle, sheep, etc

Pig farming

Poultry farming, including egg production

Other animal farming; animal products n.e.c. (this could include the crocodile farming being developed in Palau)

The existing ISIC classes 0130 (mixed farming), 0140 (agricultural services) and 0150 (hunting and trapping) could probably be usefully retained in their existing formats, with their codes expanded for consistency to 01300, 01400 and 01500.

In total this would provide 17 categories of agricultural production, a significant increase from the four classes in the current ISIC, but a far more realistic basis for classifying diverse activities which provide as much as 20% of GDP in some PICTs.

4.2 Classification of fishing production in the Pacific

Looking to fishing, it is clear that the single ISIC class 0500 "*Fishing; operation of fish hatcheries and fish farms; service activities incidental to fishing*" amalgamates a range of activities which are each of considerable interest to the region. As noted previously, Revision 2 of ISIC did separate out the two broad categories, "*Ocean and coastal fishing*" and "*Fishing in inland waters, fish hatcheries, cultivated beds, fishery service activities*", but these were merged into a single class in Revision 3. This suggests strongly that any future revisions of ISIC are unlikely to break 0500 into more than one class – as such there is a strong case for developing a "regional standard" set of fishing codes.

Some of the statistics quoted previously suggest a need for separate classification of tuna fishing – but do the other activities covered by ISIC 0500 need separate identification? The answer is most certainly that they do. Not only are they extremely diverse in nature but there is strong (and growing) interest in monitoring activity in many aspects of fishing, including some which may be relatively minor at present but are hoped to develop in the future. For example, while Kiribati is very strongly influenced by tuna fishing – local per capita consumption of tuna is estimated at over 180kg per annum, and the value of the foreign-owned longline catch exceeds the total GDP – there is also very keen interest in the tourism implications of bonefishing on Kiritimati Island. If one were developing a fishing classification for Kiribati the obvious starting point would be separate treatment of long-line fishing, artisinal fishing, and recreational fishing.

The range of activities in 0500 includes many which are of great importance to particular PICT economies:

- *Pearl farming* is a dominant feature of economic activity in the Cook Islands and French Polynesia
- New Caledonia has a major aquaculture project for *prawn farming* (US$20 million in exports to France in 2000 plus considerable local consumption)
- PNG has significant activity in *prawn trawling*
- Some PICTs have developed niche markets in Asia for exports of *beche-de-mer*, *seaweed* and *shark fins*
- *Recreational/sports fishing* is a major tourism earner for a number of PICTs
- Activities such as *clam farming* and *live fish (aquarium) exports* have been encouraged in a number of countries and will no doubt continue to appear from time to time

A further issue to consider here is whether using different methods to catch the same type of seafood represents different activities. From discussions with a range of experienced fisheries scientists and analysts in the region there is no doubt that they see a clear need to collect separate data for different methods. But ISIC does not usually distinguish between modes of production eg, the wording "whether the work is performed by power-driven machinery or by hand" is used in the definition of "manufacturing".

The draft classification shown below for regional fisheries studies does distinguish between methods and gear type for major activities. It also effectively differentiates between activities according to location, as the same basic activities are carried out in quite different ways in different areas eg, any fishing for tuna in coastal waters is generally very different from deep-sea tuna fishing. The three areas which have been commonly suggested for separate classification are:

- oceanic
- coastal/reef/in-shore
- inland

This effectively represents the restoration and minor extension of the location criteria that were used to split fishing in the previous version of ISIC.

In discussions with a range of fisheries experts some have argued that the three areas described are self-evident, others that it is not possible to clearly define the boundaries between them. In a regional context it may be that it is possible only to provide a broad description and that the boundaries between the three areas for any particular PICT would have to be determined on the basis of local conditions eg, the depth and size of the lagoon, the rate of drop-off outside the reef. The issue is raised here for the sake of completeness, but leaves any detailed recommendations to come from future discussions in the region.

The draft classification proposed for fishing and related activities is as follows:

a) 05100 Coastal/reef/inshore fishing (excluding aquaculture activities)

05101 Trolling

(i) 05102 Bottom fishing in depths over 100m

05103 Other line fishing

05104 Netting

05105 Diving/spearfishing

05106 Fishing by destructive techniques (eg, dynamite, poison – this is included for completeness, but in any survey it would almost certainly be collected as part of 05107 below)

05107 Fishing by other methods (including fish traps)

05108 Collection of live aquarium fish

05109 Catching/trapping lobsters

05110 Gathering shellfish

05111 Gathering beche-de-mer

05112 Gathering clams

05113 Other coastal/reef/inshore fisheries-related activities

05200 Oceanic fishing

- 05201 Long lining
- 05202 Vertical long lining
- 05203 Purse seining
- 05204 Trolling
- 05205 Pole and line
- 05206 Prawn trawling
- 05207 Other fishing

05300 Inland fishing

(2) 05400 AQUACULTURE

- 05401 Pearl farming
- 05402 Prawn farming
- 05403 Other aquaculture

05500 OTHER MARINE ACTIVITIES

The draft classification effectively breaks the existing ISIC 0500 into five classes, three of which have a total of 23 sub-classes.

4.3 Other classifications for agriculture and fishing in the Pacific

The discussion above has focused on classifying agriculture and fishing activities according to criteria based on final outputs, methods and location. It may also be worth considering a further classification according to the underlying purpose of the activity. The possibilities which have been raised most commonly are:

- Commercial
- Artisinal (mainly for sale)
- Artisinal/subsistence (mainly for own consumption)
- Recreational

However, while there is some keen interest in having information for certain activities broken up by purpose there are very major practical problems in defining clear boundaries between the descriptions suggested above. As for the different areas for fishing suggested above, the topic is raised here for completeness and in the hope that it will help stimulate further debate.

(a) 5. Conclusion

Agriculture and fishing studies in the Pacific need to provide data at a level of detail that will support key national and intra-regional analysis. But existing international standards are more aggregated in these areas than is appropriate for the Pacific, and studies in the region have often developed their own classifications in response. Further, the international trend towards more sophisticated service industries such as electronic commerce is likely to lead to increased numbers of identified "industries" in these areas, with corresponding pressure to collapse the classification of industries with relatively small contributions to global value added. Rather than attempt to turn back the tide of ISIC development, it is proposed that a classification of agriculture and fishing activities of importance to the Pacific be developed and circulated. Hopefully this will lead to an agreed "Pacific region" standard classification that will assist survey designers and survey statisticians who are looking for guidance in these areas. This could well be a first step towards the development of a Pacific-oriented version of the full ISIC.

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