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Thailand's export opportunities and export potentials in ASEAN+3 : a Decision Support Model approach

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1. Introduction

The Asia-Pacific Region is rightly considered as the most dynamic economic region in the world (see e.g. Lasserre and Schütte, 2006). During the past decade the region has taken immense steps of regional economic integration, among which the creation of the ASEAN Free Trade Area (AFTA) and the ASEAN+3 agreements between the ASEAN countries, Japan, China and South Korea. The commitments under AFTA have opened up less-developed economies such as Vietnam, Laos and Cambodia for international trade and investment relations with the more developed ASEAN countries, among which is Thailand. At the same time, international trade and investment links between ASEAN countries, such as Thailand and China, have increased tremendously after the WTO membership of China in December 2001 and will deepen further under the China-ASEAN Free Trade Area which became operative in January 2010.

In the present paper, we endeavor to make a quantitative assessment of Thailand's export opportunities in the Asia-Pacific region. The Asia-Pacific region can be defined as consisting of the countries of East, South-East and South Asia along the Pacific Ocean. Strictly speaking, we should not include India, which is a SAARC country, bordering the Indian Ocean, but because of the signing of the Free Trade Agreement between ASEAN and India in August 2009 it seems appropriate to also include this subcontinent. Nevertheless, for the sake of comparability with some previous results, we decided to exclude India, and concentrate on ASEAN+3. Therefore Thailand's export opportunities in the other ASEAN countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Vietnam), as well as in China, Hong Kong, Taiwan⁴, Japan and South Korea will be identified and investigated.

In the next section we outline the methodology used to identify Thailand's realistic export opportunities (REOs), after which this methodology is applied using macro-economic and international trade data up to 2008. Apart from some revisions, to which we shall return soon, the same methodology was used before by one of the authors for studying Thailand's export opportunities in the ASEAN+3 region (Cuyvers, 1996, Cuyvers, 2004), thus also allowing some comparison with previous results.

The third section discusses the results based on the number of REOs. In contrast to the previous analyses (Cuyvers, 1996, Cuyvers, 2004), an attempt is made in Section 4 to better quantify the REOs based on potential export values. In Section 5, we investigate the REOs at product level. The paper ends with conclusions.

2. Methodology: decision support model approach

A small but growing literature addresses the question of how to identify opportunities for exporters (for an overview we refer to Steenkamp, Viviers and Cuyvers, 2012). The bulk of this literature focuses on attempts to segment export markets or focus on the decisions of firms entering export markets.

⁴ However, due to lacking international trade data for Taiwan in the Comtrade database, this country will not be further considered.

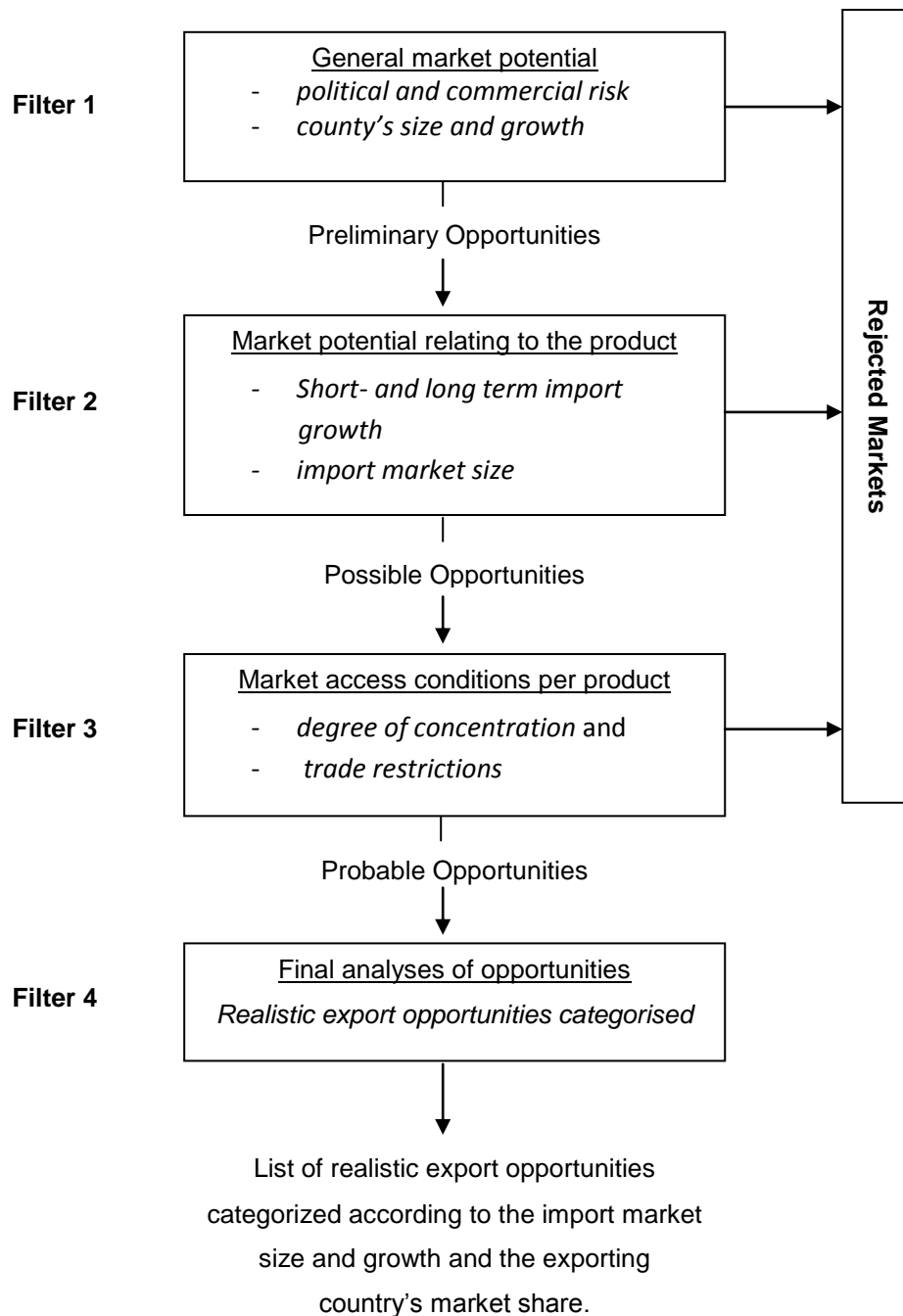
The DSM methodology (Cuyvers et al., 1995, Cuyvers, Viviers and Steenkamp, 2012) used in this study was developed based on similar methodologies in the international market research literature. It consists of consecutive steps which select markets and products based on the most recent statistical data, in such a way that it leads to a list of product:country combinations of realistic export opportunities. The methodology is summarized in the Figure 1.

In *filter 1* of the DSM, countries are eliminated that hold too high a political and/or commercial risk to the exporting country and do not show adequate size or economic growth. The rationale for this is that, with the 241 countries of the world as a starting point⁵, filter 1 enables the researchers to eliminate uninteresting countries in order to concentrate in detail on a more limited set of product:country combinations in the consecutive filters. Countries that lack general potential are therefore eliminated in this filter. In *filter 2* an assessment of the various product categories for the remaining countries is done to identify product:country combinations which show adequate import size and growth. According to Cuyvers *et al.* (1995:180) it holds true that being selected on the basis of size and growth, does not necessarily mean that markets can be easily penetrated. In *filter 3* trade restrictions and other barriers to entry are considered to further screen the remaining possible export opportunities. Two categories of barriers are considered in this filter, namely, the *degree of concentration* and *trade restrictions* (Cuyvers, 2004:261). In the *last stage* of the analysis, the realistic export opportunities that were identified in filters 1 to 3, are categorized (see Tables 2a-2c and 3a-3c)⁶.

⁵ Which constitutes to a total number of 237,626 possible export opportunities (986 SITC 4-digit level products multiplied by 241 countries in the world).

⁶ For a more detailed explanation of the methodology of the DSM and the determination of cut-off values in each filter, see Cuyvers *et al.*, 1995: 173-186 and Cuyvers, Viviers and Steenkamp, 2012: 58-84.

Figure 1: The basic methodology of the DSM



In the past the methodology has been used for Belgium (Cuyvers et al., 1995; Cuyvers, Steenkamp and Viviers, 2012b), the Philippines, Thailand (Cuyvers, 1996; Cuyvers, 2004; Cuyvers, Steenkamp and Viviers, 2012a) and South Africa (Pearson, Viviers, Cuyvers and Naudè, 2010; Viviers, Steenkamp, Rossouw and Cuyvers, 2010).

It should be stressed, that although we investigate Thailand's REOs in ASEAN+3, these are derived from the list of Thailand's REOs worldwide. Therefore, the filtering process starts with all countries in the world for which data are available and cut-off values for determining which export opportunities should be neglected are derived from characteristics of the relevant statistical distributions at world scale.

2.1 Filter 1

As indicated above, Filter 1 of the DSM consists of two sets of importing country criteria that are investigated. We first analyse importing country risks for 241 countries based on information from Office National du Ducreire (ONDD, 2009), followed by macro-economic performance of importing countries, for which use is made of World Bank data. After this first filtering process, we retained 106 countries that passed the two sets of criteria employed. In order to avoid repetition, the reader is referred for full details to Cuyvers, Steenkamp and Viviers (2012a).

2.2 Filter 2

In Filter 2, 2003 to 2007 UN Comtrade import trade data at HS 6 digit level are analyzed for the countries that passed Filter 1. However, for some of these countries no import data were available. This was the case e.g., for Antigua and Barbuda, Puerto Rico, the Channel Islands, but also Taiwan. For some other countries, no 2007 international trade data were found, in which case the latest year was taken (e.g., 2006 for Vietnam and Macao, but e.g., 2005 for the United Arab Emirates). We finally investigated 545,703 product:country combinations according to their import size and growth rates in Filter 2.

A given country's imports for a specific product will be considered as offering interesting export potential for Thailand if they show either sufficient volume and/or import growth in the short and longer term. The sufficiency criterion applied is derived from the calculation of cut-off values for each product group j at HS 6 digit level, as described in Cuyvers, Steenkamp and Viviers (2012a). Based on this, we selected 226,446 product:country combinations, as possible realistic export opportunities for Thailand in the world market.

2.3 Filter 3.1: import market concentration

Filter 3 evaluates a country's ability to penetrate foreign markets. This ability depends on various trade barriers and restrictions. In the past, Cuyvers *et al.* (1995:180-181) and Cuyvers (2004:261-262) has considered the import market concentration of each country's imports at HS 6 digit level according to country of origin of the imports, as measured by the Herfindahl-Hirschmann Index (HHI). Again, applying the statistical method, outlined in detail in Cuyvers, Steenkamp and Viviers, 2012a), cut-off values are calculated, leading to the selection of 91,583 product:country combinations as showing import market concentration ratios which are smaller than the respective cut-off values.

2.4 Filter 3.2: import market access restrictions

As in our previous research on realistic export opportunities of Belgium and Thailand (Cuyvers, 1996, Cuyvers, 2004, Cuyvers et al., 1995) we refrained from quantifying market access barriers, and instead have used an index of "revealed absence of barriers to trade" as proxy. This index shows the share of Thailand's fellow ASEAN-5⁷ countries' exports to country i of product group j in their respective exports of product group j , corrected for the share of that country i in world trade of product group j . It is assumed

that Thailand has no “revealed barriers to trade” in a market if at least one of the four other ASEAN-5 countries has a “revealed comparative advantage” in exporting to that market.

Applying this criterion, leads to the selection of 92,495 product:country combinations with an apparent market accessibility which is similar to that which at least one of Thailand’s neighbouring countries is experiencing for the same product group in the same importing country.

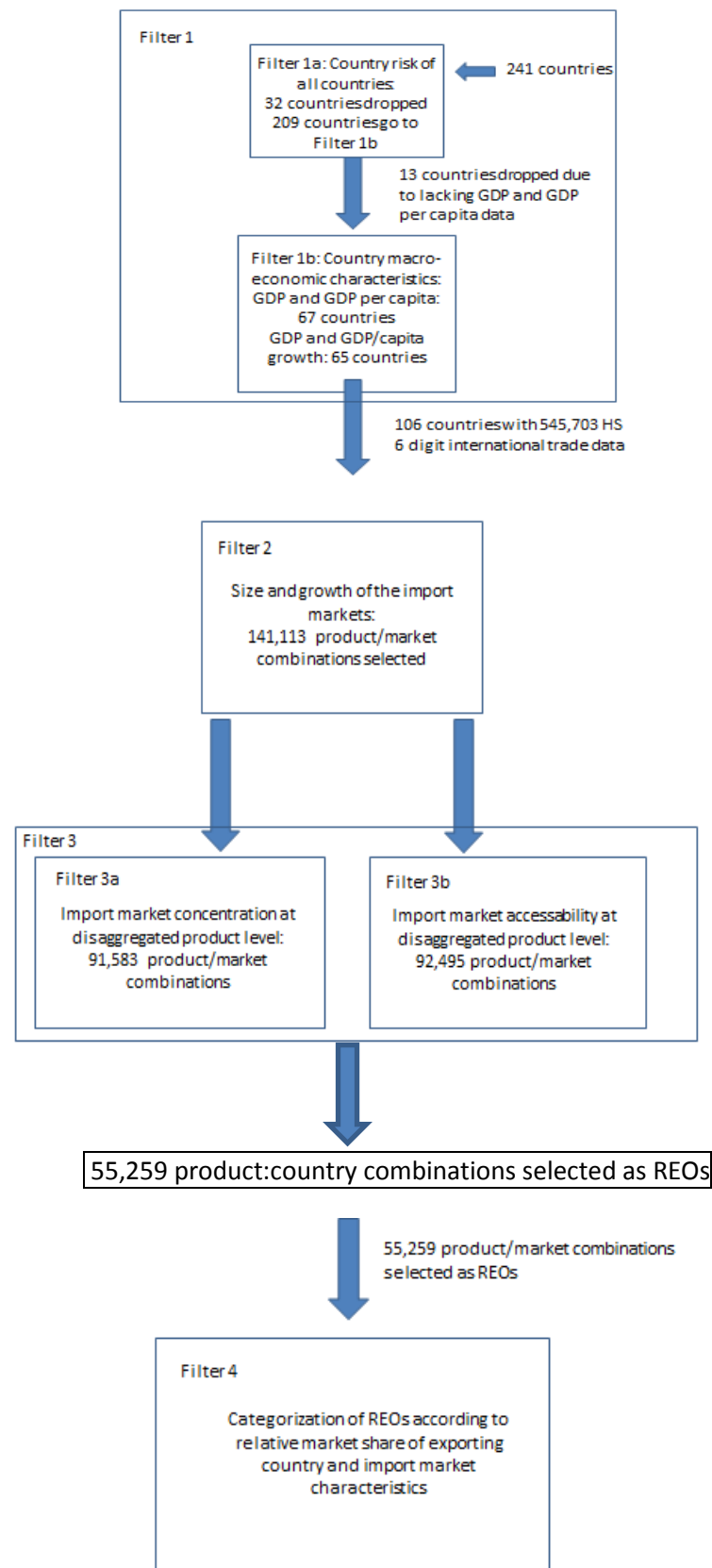
For export opportunities to be realistic export opportunities (REOs) we require that the respective import markets are both sufficiently accessible and reasonably competitive (less concentrated). Mathematically this means that we take the union of the product:country combinations selected on the basis of import market concentration and market accessibility. The union thus constructed contains 55,259 REOs.

2.5 Filter 4: the categorization of Thailand’s realistic export opportunities according to import market characteristics and import market share

The last step of the DSM methodology categorizes the REOs identified in the previous steps according to the import market characteristics and Thailand’s import market share for each REO taken separately (for more detail, we refer the reader to Cuyvers, Steenkamp and Viviers, 2012a). Figure 3 below summarizes the filtering process followed and shows the categorization of Thailand’s REOs in ASEAN+3.

⁷ ASEAN-5, apart from Thailand, consists of Indonesia, Malaysia, the Philippines and Singapore.

Figure 2: Summary of the DSM filtering process as applied to Thailand



In Cuyvers (2004) much fewer REOs were identified, which, however, is largely (though not entirely, as will become clear immediately) due to the disaggregation level of the international trade data used. In contrast to Cuyvers (2004) where SITC 4 digits international trade data were fed into the filtering process of the DSM, the present research is based on HS 6 digit data.

3. Thailand's realistic export opportunities in the ASEAN+3 countries

3.1 ASEAN+3's share in Thailand's export opportunities

Table 1 depicts the distribution of the number of REOs in ASEAN+3, as compared to these found in previous runs of the DSM for Thailand (Cuyvers, 1996; Cuyvers, 2004). The absolute numbers of 1993 and 1997 are not comparable with these of 2008, due to a different and more disaggregated international data set (see below).

Table 1: Thailand's realistic export opportunities in ASEAN+3 (numbers) 1993-1997-2008

Country	No of REO 1993	%	No of REO 1997	%	No of REO 2008	%
Brunei	27	1,93%	-	-	-	-
China	164	11,75%	144	15,27%	1025	35,10%
Philippines	119	8,52%	114	12,09%	-	-
Hong Kong	189	13,54%	142	15,06%	251	8,60%
Indonesia	111	7,95%	-	-	193	6,61
Japan	211	15,11%	179	18,98%	551	18,87%
Macao	-	-	-	-	41	1,40%
Malaysia	108	7,74%	134	14,21%	227	7,77%
Singapore	224	16,05%	95	10,07%	409	14,01%
Taiwan	115	8,24%	82	8,70%	-	-
South-Korea	128	9,17%	53	5,62%	23	0,79%
Vietnam	-	-	-	-	200	6,85%
Total ASEAN+3	1396	100,00%	943	100,00%	2920	100,00%
World vs. ASEAN+3	2962	47,13%	2246	41,99%	55259	5,28%

Source: 1993:Cuyvers, 1996; 1997: Cuyvers, 2004; 2008: own calculations.

Of the 55,259 REOs in the world at large, only 2,920 are situated in the ASEAN+3 countries, or 5,3 % of Thailand's worldwide REOs, which is a somewhat surprising result compared to previous results. In Cuyvers (2004) this percentage share amounted to 42 % and eight years before even 47,1 % (Cuyvers, 1996). This apparent and dramatic drop needs explanation.

One reason is the number of importing countries considered in the present study. In the 1997 run (Cuyvers, 2004) 44 countries were finally ranked according to the number of REOs which Thailand possibly could tap, and in the 1993 run: 53 countries (Cuyvers, 1996). Almost twenty years later, using data up to 2008 95 countries ended with REOs in the final list. Therefore, a lower share for ASEAN+3 can

be expected as many more countries were selected, which evidently decreases the percentage of the ASEAN+3 REOs considerably. Comparing the percentage share that the region represents in 2007-2008 in Thailand's worldwide REOs with this percentage in 1997 is thus utterly misleading. Moreover, most of the ASEAN+3 countries with REOs now appear further down in the list, such that if we restrict our analysis to the top 44 countries in 2008, in order to compare with the 44 countries of 1997, only Japan and China are in that group.

Another reason is to be found in the number of ASEAN+3 countries selected. Whereas in 1997 8 ASEAN+3 countries were among the 44 countries, which came out of the filtering process, the list of ASEAN+3 countries that ended up in Thailand's 2008 run is smaller than in 1997. Taiwan and the Philippines, are not among the countries. Taiwan was eliminated in Filter 2 due to lacking HS international trade data in Comtrade, while the Philippines was deleted in Filter 1.2 due to insufficient levels of GDP/GDP per capita and of GDP/GDP per capita growth. However, that Taiwan and the Philippines are not included cannot possibly be held responsible for the low share of ASEAN+3 in the present results.

The third and most important reason for the dramatic drop of the share of ASEAN+3 in Thailand's 2008 REOs is the spectacular rise in importance of Europe. In 1997 the EU-15 represented 22 % of Thailand's REOs, in 2008 the EU-15 share increased to 39 %, which to a large extent is due to further and deeper economic European integration. More importantly is, however, the rise in the number of Thailand's REOs in the Central and Eastern European countries (CEECs), a number of which also became member of the EU in the past couple of years. In 1997 only two CEECs appeared in the final list: Poland and Hungary, accounting for only 1.6 % of Thailand's REOs. In 2008, however, the CEECs represented 26.7 % of Thailand's REOs, with Russia ranking highest among the CEEs and being good for 3.2 % of Thailand's REOs. It remains to be seen how Europe's share in Thailand's REOs will evolve after 2009, particularly in the light of the ever recurring Eurocrisis. This is, however, can only be ascertained by an analysis of data up to, say 2010 or 2011, which is not possible at present, due to the unavailability of the data.

3.2 Thailand's realistic export opportunities in ASEAN+3 according to Thailand's market share and import market characteristics

In order to further analyze Thailand's REOs in ASEAN+3, we categorize these REOs according to Thailand's market share and the import market characteristics as outlined at length in Cuyvers, De Pelsmacker, Rayp and Roozen (1995), Cuyvers (1996), Cuyvers (2004), Cuyvers, Viviers and Steenkamp (2012) and Cuyvers, Steenkamp and Viviers (2012a).

The categorization according to Thailand's market share per REO is based on the degree of market importance of its exports of product group  to country in comparison with the combined degree of market importance of the six exporting countries with the largest exports of the product category to the country in question.⁸

⁸ For full details, the reader is referred to Cuyvers et al.(1995), Cuyvers, (2004), Cuyvers, Viviers and Steenkamp (2012) and Cuyvers, Steenkamp and Viviers (2012a).

We also will take into account Thailand's present export potential by considering per REO Thailand's "revealed comparative advantage" and therefore distinguish between "potential " REOs (all REOs which come out of Filter 3) and "actual" REOs (only REOs for which Thailand's "revealed comparative advantage index" is sufficiently high, say 0.7– see Balassa, 1965)

Table 2a distributes Thailand's 2920 "potential" REOs in ASEAN+3, whereas Table 2b shows the distribution of the "actual" REOs in ASEAN+3 ($RCA \geq 0.7$).

Table 2a: Distribution of Thailand's potential realistic export opportunities in ASEAN+3 according to relative market position and market characteristics

	Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Large product/market	(Cell 1) 326 (11.16%)	(Cell 6) 86 (2.95%)	(Cell 11) 149 (5.10%)	(Cell 16) 154 (5.27%)	715 (24.49%)
Growing (long- and short term) product/market	(Cell 2) 817 (27.98%)	(Cell 7) 94 (3.22%)	(Cell 12) 84 (2.88%)	(Cell 17) 226 (7.74%)	1221 (41.82%)
Large product/market short term growth	(Cell 3) 112 (3.84%)	(Cell 8) 30 (1.03%)	(Cell 13) 49 (1.68%)	(Cell 18) 44 (1.51%)	235 (8.05%)
Large product/market long term growth	(Cell 4) 112 (3.84%)	(Cell 9) 50 (1.71%)	(Cell 14) 68 (2.33%)	(Cell 19) 44 (1.51%)	274 (9.38%)
Large product/market short- and long term growth	(Cell 5) 216 (7.40%)	(Cell 10) 68 (2.33%)	(Cell 15) 108 (3.70%)	(Cell 20) 83 (2.84%)	475 (16.27%)
Total	1583 (54.21%)	328 (11.23%)	458 (15.68%)	551 (18.87%)	2920 (100%)

In Table 2a, Cell 2 shows the highest number of REOs, followed by Cell 1. Cell 17 ranks third. It is interesting to compare the ranking of the cells of Table 2a with the ranking of the cells of the categorization matrix of 1997 (Cuyvers, 2004). The Spearman rank correlation between both rankings of cells is hardly 0.131, which implies that important shifts have occurred in time of the REOs categorized according to Thailand's market share and the import market characteristics. At present it is unclear what the impact is of the nature and disaggregation level of the international trade data used, and what is the impact of changing market conditions for Thailand in ASEAN+3. Only new runs of the DSM for other time periods and using HS 6 digits instead of SITC 4 digits international trade data will explain this, which is beyond the scope of the present paper.

Dramatic changes in the position of the REOs in the categorization matrix evidently present an important challenge for the formulation of longer term export promotion strategies at export product level and imply that such strategies are best formulated only for the REOs with a relative stable position in this matrix.

From Table 2a it can be concluded that somewhat more than half (54,2 %) of Thailand's "potential" REOs are in markets where Thailand's market share is negligible or very small, but one third (34,6 %) in markets where it is high or moderately high, thus offering immediate export potential.

This conclusion is strengthened by looking at Thailand's "actual" REOs, 42.5 % of which are in markets where Thailand achieved a high or intermediately high market share. Although the share of ASEAN+3 in Thailand's REOs in 1997 was much higher, the distribution of these REOs according to Thailand's market share has remained rather similar, i.e. these in markets where Thailand's market share is very small, or high and intermediately high, representing 39,9 % and 41,0 % respectively (based on the data in Cuyvers, 2004: 272, Table VI).

Table 2b: Distribution of Thailand's realistic export opportunities in ASEAN+3 with RCA \geq 0.7, according to relative market position and market characteristics

	Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Large product/market	(Cell 1) 34 (3.83%)	(Cell 6) 19 (2.14%)	(Cell 11) 35 (3.95%)	(Cell 16) 42 (4.74%)	130 (14.66%)
Growing (long- and short term) product/market	(Cell 2) 231 (26.04%)	(Cell 7) 39 (4.40%)	(Cell 12) 34 (3.83%)	(Cell 17) 89 (10.03%)	393 (44.31%)
Large product/market short term growth	(Cell 3) 15 (1.69%)	(Cell 8) 14 (1.59%)	(Cell 13) 9 (1.01%)	(Cell 18) 10 (1.13%)	48 (5.41%)
Large product/market long term growth	(Cell 4) 22 (2.48%)	(Cell 9) 27 (3.04%)	(Cell 14) 35 (3.95%)	(Cell 19) 17 (1.92%)	101 (11.39%)
Large product/market short- and long term growth	(Cell 5) 67 (7.55%)	(Cell 10) 42 (4.73%)	(Cell 15) 66 (7.44%)	(Cell 20) 40 (4.51%)	215 (24.24%)
Total	369 (41.60%)	141 (15.90%)	179 (20.19%)	198 (22.32%)	887 (100%)

The largest number of REOs, both "potential" and "actual", are found in markets which are growing in the short and long term: 41.8 % and 44.3 %, respectively. Based on the 1997 data (Cuyvers, 2004: 272, Table VI) the corresponding percentage in that year was 40.5 %. Of the "potential" and "actual" REOs in markets where Thailand's market share is small, 28 % and 26% are situated in growing import markets respectively (22.7 % in 1997, according to data in Cuyvers, 2004:271, Table VI). Particularly the high share of the "actual" REOs is striking, as these relate to products which Thailand is already exporting to other destinations (the RCA being equal or higher than 0.7), thus seemingly providing evidence of

persistent unused export potentials. This conclusion, however, will prove to be premature, as it is solely based on the number of “potential” and “actual” REOs. In the next section, we will attempt at a rough estimate of the monetary values (in US\$) behind these numbers.

4. Thailand's export potential in ASEAN+3

Whereas the analysis of the previous section is based on the numbers of REOs, we endeavor in the present section to make a rough estimate of the export values associated with these numbers. We follow a procedure outlined in Cuyvers, Viviers and Steenkamp (2012:78) and equate the potential export value associated with REO of product *j* in country *i* with the total imports of product *j* in country *i*, divided by the number of countries (plus one), which contribute 80 % of these imports. The potential export value thus calculated can be considered as the average value of imports from the exporting countries which represent 80% of these imports. It is then assumed that this “average” sufficiently approximates Thailand's export potential, measured in US\$. The potential export values of the REOs which share common characteristics, e.g., as belonging to the same cell of Table 2a or Table 2b, can then be added up.

In Table 3a and 3b the distribution of these total potential export values of Thailand is shown, according to import market characteristics and Thailand's market share in the import markets considered.

Table 3a: Distribution of Thailand's potential realistic export opportunities in thousand US\$ in ASEAN+3 according to relative market position and market characteristics

	Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Large product/market	(Cell 1) \$ 14,101,046 (14.61%)	(Cell 6) \$4,342,379 (4.50%)	(Cell 11) \$10,113,843 (10.48%)	(Cell 16) \$8,095,346 (8.39%)	\$36,652,614 (37.97%)
Growing (long- and short term) product/market	(Cell 2) \$2,918,868 (3.02%)	(Cell 7) \$626,726 (0.65%)	(Cell 12) \$1,954,056 (2.02%)	(Cell 17) \$1,754,931 (1.82%)	\$7,254,581 (7.51%)
Large product/market short term growth	(Cell 3) \$2,124,634 (2.20%)	(Cell 8) \$987,310 (1.02%)	(Cell 13) \$1,896,779 (1.96%)	(Cell 18) \$2,111,375 (2.19%)	\$7,120,098 (7.38%)
Large product/market long term growth	(Cell 4) \$2,486,089 (2.58%)	(Cell 9) \$1,253,865 (1.30%)	(Cell 14) \$2,856,438 (2.96%)	(Cell 19) \$3,315,933 (3.43%)	\$9,912,325 (10.27%)
Large product/market short- and long term growth	(Cell 5) \$4,229,644 (4.38%)	(Cell 10) \$4,650,140 (4.82%)	(Cell 15) \$15,131,285 (15.67%)	(Cell 20) \$11,588,912 (12.00%)	\$35,599,981 (36.88%)
Total	\$25,860,281 (26.79%)	\$11,860,420 (12.29%)	\$31,952,401 (33.10%)	\$26,866,497 (27.83%)	\$96,539,599 (100%)

Table 3b: Distribution of Thailand's realistic export opportunities in thousand US\$ in ASEAN+3 with $RCA \geq 0.7$, according to relative market position and market characteristics

	Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Large product/market	(Cell 1) \$628,345 (1.93%)	(Cell 6) \$506,508 (1.55%)	(Cell 11) \$2,954,593 (9.06%)	(Cell 16) \$2,053,485 (6.30%)	\$6,142,931 (18.84%)
Growing (long- and short term) product/market	(Cell 2) \$784,186 (2.41%)	(Cell 7) \$244,440 (0.75%)	(Cell 12) \$1,471,282 (4.51%)	(Cell 17) \$1,095,797 (3.36%)	\$3,595,705 (11.03%)
Large product/market short term growth	(Cell 3) \$189,405 (0.58%)	(Cell 8) \$571,605 (1.75%)	(Cell 13) \$108,178 (0.33%)	(Cell 18) \$163,835 (0.50%)	\$1,033,023 (3.17%)
Large product/market long term growth	(Cell 4) \$163,534 (0.50%)	(Cell 9) \$710,453 (2.18%)	(Cell 14) \$1,046,135 (3.21%)	(Cell 19) \$2,515,841 (7.72%)	\$4,435,963 (13.61%)
Large product/market short- and long term growth	(Cell 5) \$1,034,014 (3.17%)	(Cell 10) \$1,908,514 (5.85%)	(Cell 15) \$12,240,441 (37.55%)	(Cell 20) \$2,211,168 (6.78%)	\$17,394,137 (53.35%)
Total	\$2,799,484 (8.59%)	\$3,941,520 (12.09%)	\$17,820,629 (54.66%)	\$8,040,126 (24.66%)	\$32,601,759 (100%)

From Table 3a and 3b it appears that Thailand's total potential exports value amounts to 96.5 billion US\$, of which 32.6 billion US\$ is related to products that Thailand is already successfully exporting to other markets.⁹ However, caution is required as to these amounts since the potential US\$ value of each REO should not be considered as a true estimate of the export value that can be attained, but rather as a means to weigh each REO against the others.

Comparing Table 2a with Table 3a, we can clearly see how weighing each REO by the assumed US\$ value of its export potential, makes quite a difference in the distribution of the REOs over the cells of the categorization matrix and that our first conclusion, based on numbers of REOs, was severely biased. Particularly, it appears now that Thailand's potential REOs in ASEAN+3, for which the country has achieved already high or moderately high market share and when weighed by potential export values as defined above, are good for 60.9 % of the potential export value in ASEAN+3 of the "potential" REOs, and even 79.3 % of the potential export value in ASEAN+3 of the "actual" REOs. Accordingly, the importance of the "potential" REOs in ASEAN+3 with a small or negligible market share of Thailand, is much lower, although still representing 26.8 %, which means that in this column we find many REOs with small potential export value. When considering only the "actual" REOs, the share in the total potential export value, of the REOs with small or negligible market share of Thailand is only 8.6 %. The reduction of the

share of Cells 1-5 is largely due to the impact on Cell 2 of weighing by potential export values. This Cell 2 now represents only 3 % of the “potential” export value and 2.4 % of the value of “actual” REOs, as compared to 28 % and 26 % respectively, if unweighted.¹⁰

It is interesting to compare these shares for the REOs in ASEAN+3 with these for Thailand's REOs worldwide. The latter share in the total potential export value of REOs with high or moderately high Thai market share is 33.1 % for the “potential” REOs and 40.2 % for the “actual” REOs (Cuyvers, Steenkamp and Viviers, 2012a). It thus can be concluded that many ASEAN+3 REOs will probably, and on average, offer Thailand quicker results than REOs elsewhere in the world.

5. Thailand's export potential in ASEAN+3 per broad product category and policy implications

Tables 4a and 4b show Thailand's “potential” and “actual” REOs per broad product category.

Machinery represents the largest share of the “potential” REOs, both weighted (40.1 %, as compared to 27.7 % in Thailand's worldwide REOs) or unweighted (25.9 %, as compared to 19.7% in Thailand's worldwide REOs), followed by transport equipment (12.2 % when weighted by export values) and chemicals (9.5 %). It is striking that agro-business products (HS 01-24) make up hardly 2.5 % of Thailand's REOs in value terms (5.4% in Thailand's REOs worldwide), but 7 % in number of opportunities (11.5% in Thailand's worldwide REOs) in spite of a widely accepted image of Thailand of being an important international competitor in agro-business.

Restricting our analysis to the “actual” REOs, i.e. these for which Thailand possesses a reasonably high comparative advantage (see Table 4b), when weighted with potential export values, machinery even represents a higher share (54.2 %, as compared to 34.9 % in the worldwide REOs). Transport equipment (8.2 %, as compared to 16.6 % worldwide) and chemicals (4.8 %, as compared to 2.6 % worldwide) show a somewhat lower share, to the benefit of stone/glass (14.9 %, as compared to 8.7 % worldwide).¹¹

Appendix 1 depicts the Top 30 of the products at HS 6-digit level according to potential export value. It can be seen that in this Top 30, 16 products belong to the category of machinery and equipment (HS 84-85) and another five to transport equipment (HS 86-87). HS 270900 - Petroleum oils, oils from bituminous minerals, crude ranks first and is good for a potential export value of about 7.3 billion US\$ in one country (China), followed by HS 854221 - Monolithic integrated circuits, digital, in two countries (Indonesia and Singapore) with an estimated total potential export value of 6.4 billion US\$. Third comes HS 880240 - Fixed wing aircraft, unladen weight > 15,000 kg, in two countries (China and Indonesia) with a total

⁹ These values represent 11.4 % and 11.3 % of the potential export value of Thailand worldwide potential and actual REOs (based on Cuyvers, Steenkamp and Viviers, 2012a) respectively, which is considerably more than ASEAN+3's share in the number of Thailand's “potential” and “actual” REOs.

¹⁰ We were confronted with the same phenomenon in our analysis of Belgium's REOs. See Cuyvers, Steenkamp and Viviers, 2012b:101)

¹¹ When no restriction on the RCA index is applied, the stone/glass product group represents 7 %, see Table 4a

potential export value of 5.1 billion US\$. Fourth ranks HS 847989 - Machines and mechanical appliances n.e.s., in three countries (China, Japan and Singapore for a total export value of 3.1 billion US\$).

In the analysis of the Belgian REOs it was found that many products which are manufactured and marketed by large multinational enterprises are in the country's Top 30 of REOs, which evidently limits the possibilities and scope of public export promotion (Cuyvers, Steenkamp and Viviers, 2012b: 102). This seems to be much less the case for Thailand. In contrast, and similar with the Belgian case, Thailand's Top 30 list of REOs worldwide contains many more products that are mostly produced by multinationals the exports of which can hardly, if at all, be influenced by domestic public export promotion policies, thus providing an argument for some regional ASEAN+3 focused strategy of Thailand's export promotion, in spite of the region only representing 5.3 % of the number of Thailand's REOs in the world (see Table 1).

That mineral oil and related products ranks that high in the list and that this REO is situated only in one country China, is also good news, taking into account Thailand's oil industry. The same argument holds mutadis mutandis for monolithic integrated circuits and for machines and mechanical appliances n.e.s., both of which being massively produced in Thailand for exports. However, although Thailand considers itself as agro-business centre, none of the products of the HS 01-24 products are in the Top 30 and the REOs in this category represent in the country's "backyard", which ASEAN+3 is, hardly 2.5 % of Thailand's total potential export value in the region and 7 % of the total number of REOs in the region.

Table 4a: Thailand's REOs per broad product category

	Potential export value (US\$ thousand)	% of total potential export value	Number of opportunities	% of total number of opportunities
01 - 05 Animal and animal products	\$ 1.149.879	1,19%	56	1,92%
06 - 15 Vegetable products	\$ 282.600	0,29%	69	2,36%
16 - 24 Foodstuffs	\$ 989.361	1,02%	80	2,74%
25 - 27 Mineral products	\$ 7.657.211	7,93%	24	0,82%
28 - 39 Chemicals and allied industries	\$ 9.190.797	9,52%	547	18,73%
40 Rubber and rubber products	\$ 512.142	0,53%	58	1,99%
41 - 43 Raw hides, skins, leather, and furs	\$ 1.691.445	1,75%	64	2,19%
44 - 49 Wood and wood products	\$ 2.046.668	2,12%	100	3,42%
50 - 63 Textiles	\$ 1.167.926	1,21%	281	9,62%
64 - 71 Stone / Glass	\$ 6.758.357	7,00%	176	6,03%
72 - 83 Metals	\$ 5.931.628	6,14%	286	9,79%
84 - 85 Machinery / Electrical	\$ 38.674.370	40,06%	757	25,92%
86 - 89 Transportation	\$ 11.792.675	12,22%	75	2,57%
90 - 97 Miscellaneous	\$ 8.694.540	9,01%	347	11,88%
Grand Total	\$ 96.539.599	100,00%	2920	100,00%

Table 4b: Thailand's REOs per broad product category with RCA \geq 0.7

	Total potential export value (US\$ thousand)	% of total potential export value	Total number of opportunities	% of total number of opp
01 - 05 Animal and animal products	\$ 227.282	0,70%	16	1,80%
06 - 15 Vegetable products	\$ 76.299	0,23%	17	1,92%
16-24 Foodstuffs	\$ 229.466	0,70%	29	3,27%
25 - 27 Mineral products	\$ 7.847	0,02%	3	0,34%
28 - 39 Chemicals and allied industries	\$ 1.552.900	4,76%	113	12,74%
40 Rubber and rubber products	\$ 449.324	1,38%	39	4,40%
41 - 43 Raw hides, skins, leather, and furs	\$ 690.388	2,12%	28	3,16%
44 - 49 Wood and wood products	\$ 131.239	0,40%	20	2,25%
50 - 63 Textiles	\$ 215.759	0,66%	107	12,06%
64 - 71 Stone / Glass	\$ 4.854.823	14,89%	91	10,26%
72 - 83 Metals	\$ 2.492.648	7,65%	105	11,84%
84 - 85 Machinery / Electrical	\$ 17.674.667	54,21%	223	25,14%
86 - 89 Transportation	\$ 2.661.386	8,16%	24	2,71%
90 - 97 Miscellaneous	\$ 1.337.731	4,10%	72	8,12%
Grand Total	\$ 32.601.759	100,00%	887	100,00%

6. Conclusions and some policy implications

Applying the DSM methodology, using international macroeconomic data and detailed international trade data for Thailand up to 2008, has led to the identification of 55,259 country's realistic export opportunities (REOs) in the world at large. It was found that in contrast to previous studies in which the same methodology was applied, the EU-15 and the Central and Eastern European Countries take up a larger share in these opportunities and that proportionately much less opportunities than before are situated in the ASEAN+3 countries. It remains to be seen whether using more recent data similar results will be obtained, which is doubtful taking into account the impact of the persistently recurring Eurocrisis.

Concentrating on Thailand's 2,920 export opportunities in ASEAN+3, a first comparison with previous results for 1993 and 1997 provides evidence of important shifts of these REOs, when categorized according to import market characteristics and Thailand's market share situation. Designing export promotion policies and strategies is difficult, and even hazardous, when based on the REOs which are affected by volatile business conditions. Thailand's export promotion policies and strategies should rather focus on the REOs, the categorization of which remains stable over time. As the nature of the international trade data used in the calculations in the past and in the present study changed from SITC 4 digit to the much more detailed and practical HS 6 digit data, the identification of these REOs must be postponed until more recent HS data can be obtained.

Whereas in previous research a headcount was used of the REOs identified per importing country or per product, in the present research (following Cuyvers, Steenkamp and Viviers, 2012b) an attempt is made to weigh each individual REO by an (admittedly rough) estimate of its potential export value in US dollars. It is shown that such weighing allows to focus on the more important REOs (in export value), instead of these which are more often detected but which might easily dilute export promotion efforts (as to be applied to too many import markets).

A further distinction is made between “actual” REOs (for which Thailand has already reached a sizable comparative advantage in international trade) and “potential” REOs (i.e. the set of all REOs, irrespective of Thailand’s comparative advantage). The distinction is of particular importance as it allows a focus by Thailand’s export promotion agency on the promotion of the exports of products that are already successfully exported by the country. It is shown that 35 % of the REOs (unweighted by estimated potential export value) in ASEAN+3 are in China and another 18.9 % in Japan. Based on a headcount of the number of REOs as categorized according to import market characteristics and Thailand’s market position, one third (34,6 %) of Thailand’s “potential” REOs are in markets where the country’s market share can be considered as high or moderately high, thus offering immediate export potential. This conclusion is strengthened when considering Thailand’s “actual” REOs, with a share of 42.5 % in such markets. Moreover, the largest number of REOs, both “potential” and “actual”, is found in markets which are growing in the short and long term: 41.8 % and 44.3 %, respectively.

Weighing the individual REOs with the estimated potential export value, reinforces the importance of the REOs in ASEAN+3 for which the country has achieved already high or moderately high market share, which then represent 60.9 % of the potential export value in ASEAN+3 of the “potential” REOs, and even 79.3 % of the potential export value in ASEAN+3 of the “actual” REOs. When compared with the corresponding shares of these respective types of REOs in the set of Thailand’s REOs worldwide, which are considerably smaller, it can be concluded that many ASEAN+3 REOs will, probably and on average, offer Thailand quicker results than REOs elsewhere in the world.

Based on the product composition of Thailand’s “actual” REOs in ASEAN+3, the product category machinery and equipment takes up the biggest share (54.2 %), thus offering more immediate export potential in the ASEAN+3 markets, and even more there than in the world at large (the share of this product category in the “actual” REOs worldwide being smaller: 34.9 %).

Also the composition of the top 30 list of REOs in ASEAN+3 according to potential export value, much more than the top 30 list of Thailand’s REOs worldwide, advocates in favor of a sufficiently important regional focus of export promotion of Thailand. It is e.g., striking that in the former list, the products which can be considered as the traditional “playground” of multinational business (automobiles, pharmaceuticals, etc.) are less prominent, thus offering scope for the promotion of Thai export products, among which many machines, parts and components, electrical appliances and parts, etc. This is evidently not to say that one should neglect the export potentials that multinational corporations are

offering, as a number of products in the top 30 REOs in ASEAN+3 can be outsourced to and supplied by Thai producers.

Although it seems unwise to advocate to solely concentrate Thailand's export promotion on the region, our conclusions nevertheless are in favor of concentrating relatively more of the country's scarce public export promotion resources on ASEAN+3, in spite of its apparent and somewhat surprisingly low share in Thailand's REOs. As economic integration in the region is deepening, in particular taking into account the prospective creation of the ASEAN Economic Community in 2015 and the Chinese-Japanese backed plans for the establishment of an East Asia Free Trade Area, an enhanced regional focus, seems to warrant the most export success.

REFERENCES

- Balassa, B. (1965). *Trade Liberalisation and Revealed Comparative Advantage*, Centre Paper 63, Yale University Economic Growth Centre, New Haven.
- Cuyvers, L. (1996). *Export opportunities of Thailand. a decision support model approach*, Journal of Euro-Asian management, 12 (2) . 71-96.
- Cuyvers, L. (2004). *Identifying export opportunities. the case of Thailand*, International Marketing Review, 21 (3). 255-278.
- Cuyvers, L., De Pelsmacker, P., Rayp, G. & Roozen, I.T.M. (1995). *A decision support model for the planning and assessment of export promotion activities by government export promotion institutions. the Belgian case*. International Journal of Research in Marketing 12.173-186.
- Cuyvers, L. and Dumont, M. (2008). *Export opportunities and export promotion activities in Belgium. Is there any connection?* Review of Business and Economics 53(1). 69-92.
- Cuyvers, L., Viviers, W. and Steenkamp, E. (2012). *The methodology of the decision support model*. Cuyvers, L. and Viviers, W. (Eds.). *Export Promotion – A Decision Support Model Approach*, Stellenbosch. SUN Press, 57-83.
- Cuyvers, L., Steenkamp, E. and Viviers, W. (2012a). *Thailand's export opportunities and export potentials in the world – A quantitative assessment using the DSM approach*. CAS Discussion Paper Nr. 82, Centre for ASEAN Studies, University of Antwerp, forthcoming.
- Cuyvers, L., Steenkamp, E. and Viviers, W. (2012b). *Belgium's export opportunities and export potentials in the world – A quantitative assessment using the DSM approach*. Cuyvers, L. and Viviers, W. (Eds.), *Export Promotion – A Decision Support Model Approach*, Stellenbosch. SUN Press, 88-111.
- Lasserre, P. & H. Schütte (2006). *Strategies for Asia Pacific-Meeting New Challenges*, Basingstoke. Palgrave
- ONDD (Office National du Ducroire). Nationale Delcreditedienst, (2009), ONDD (Office National Du Ducroire). 2009. *Country risks summary table*. (Online.) Available from: <http://www.ondd.be/webondd/Website.nsf/TRiskEn?OpenView&StartKey=A&Count=300&Expand=1>. Accessed. 27 October 2009.
- Pearson, J., Viviers, W., Cuyvers, L. and Naudé, W. 2010. *Identifying Export Opportunities for South Africa in the Southern Engines. A DSM Approach*. International Business Review, Vol. 19, No.4, August 2010, pp.345-359.
- Steenkamp, E., Viviers, W. and Cuyvers, L. (2012). *Overview of international market selection methods*, in: Cuyvers, L. and Viviers, W., (Eds.), *Export Promotion – A Decision Support Model Approach*, Stellenbosch. SUN Press, 29-55.
- Viviers, W., Steenkamp, E.A., Rossouw, R. and Cuyvers, L. (2010). *Identifying realistic export opportunities for South Africa. Application of a Decision Support Model (DSM) using HS 6-digit level product data*. Final Report prepared for the Department of Trade and Industry, South Africa, September 2010, 56 pp.
- Willemé, P. and Van Steerteghem, D. (1993). *Een normatief model voor de planning van exportbevorderende activiteiten van de Vlaamse Dienst voor de Buitenlandse Handel*. Brussels. Vlaamse Dienst voor de Buitenlandse Handel, Brussels. (Unpublished report.).

APPENDICES

APPENDIX 1: TOP 30 OF THAILAND'S REALISTIC EXPORT OPPORTUNITIES IN POTENTIAL EXPORT VALUE.

HS 6-digit product category	Product ranking by potential export values (US\$ thousands)	Potential export value	Number of opportunities
270900 - Petroleum oils, oils from bituminous minerals, crude	1	\$ 7,259,776	1
854221 - Monolithic integrated circuits, digital	2	\$ 6,397,838	2
880240 - Fixed wing aircraft, unladen weight > 15,000 kg	3	\$ 5,143,265	2
847989 - Machines and mechanical appliances nes	4	\$ 3,126,338	3
710239 - Diamonds (jewellery) worked but not mounted or set	5	\$ 2,561,023	3
847150 - Digital process units wh	6	\$ 1,402,913	4
870324 - Automobiles, spark ignition engine of >3000 cc	7	\$ 1,381,165	2
870323 - Automobiles, spark ignition engine of 1500-3000 cc	8	\$ 1,261,016	2
901380 - Optical devices, appliances and instruments, nes	9	\$ 1,127,399	1
870899 - Motor vehicle parts nes	10	\$ 999,202	5
711319 - Jewellery and parts of precious metal except silver	11	\$ 983,591	4
853400 - Electronic printed circuits	12	\$ 904,789	3
870840 - Transmissions for motor vehicles	13	\$ 890,669	3
852990 - Parts for radio/tv transmit/receive equipment, nes	14	\$ 820,773	2
381800 - Chemical element/compound wafers doped for electronic	15	\$ 801,122	3
851790 - Parts of line telephone/telegraph equipment, nes	16	\$ 715,919	1
711031 - Rhodium unwrought or in powder form	17	\$ 703,168	2
854110 - Diodes, except photosensitive and light emitting	18	\$ 676,252	3
280461 - Silicon, >99.99% pure	19	\$ 651,755	2
853890 - Parts, electric switches, protectors & connectors nes	20	\$ 641,142	4
850440 - Static converters, nes	21	\$ 633,319	3
870829 - Parts and accessories of bodies nes for motor vehicle	22	\$ 620,200	2
740400 - Copper/copper alloy waste or scrap	23	\$ 619,704	2
854160 - Mounted piezo-electric crystals	24	\$ 606,697	3
845710 - Machining centres, for working metal	25	\$ 574,839	1
470321 - Chem wood pulp, soda or sulphate, conifer, bleached	26	\$ 550,666	2
847990 - Parts of machines and mechanical appliances nes	27	\$ 544,360	4
854121 - Transistors, except photosensitive, < 1 watt	28	\$ 517,397	2
844720 - Flat knitting machines, stitch-bonding machines	29	\$ 489,566	1
853690 - Electrical switch, protector, connector for < 1kV nes	30	\$ 479,623	3