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COUNTRY PRESENTATION
ON
METHODOLOGY FOR ESTIMATION OF
GROSS OUTPUT & INTERMEDIATE CONSUMPTION FOR CAMBODIA
Under Project ADB – RETA6483

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NO.	ESTIMATES	METHODOLOGY	SOURCES OF DATA
I. REFERENCE YEAR AND LEVEL OF AGGREGATES			
1	Base Year	Base year selected is CY 2005. The main reasons are: <ul style="list-style-type: none"> - Final 2005 GDP and GDE accounts are available where economic growth (GDP) is observed to be higher (13.3%) when compared to other years - Data for ICP 2005 is available for estimates of final demands - Cambodian Socio-economic Survey 2004 (CSES2004) is close to the chosen base year. - Producer's Price Index for 2005 is available - National accounts data is available for estimates of GVA by income factors 	Cambodia National Accounts 2005 (CAMSNA 2005)
2	Levels of aggregation	The current official CAMSNA aggregate levels were broken down into 48 industries at ISIC 2-digit by 49 products at CPC 2-digit levels of classification (48 x 49).	<ul style="list-style-type: none"> - 48 by ISIC Rev.3.1 - 49 by CPC v.1.1
	Sector Disaggregations	<ul style="list-style-type: none"> - Agriculture 3 x 4 - Mining & Quarrying 4 x 4 - Manufacturing 19 x 19 - Electricity & Water 2 x 2 - Construction 1 x 1 - Services 19 x 19 	<ul style="list-style-type: none"> - CAMSNA data / MAFF - CSES2004, Employer Ratios - SIE 2000 - CAMSNA - CAMSNA - CAMSNA / LFS (est.2005)

II. MATRIX OF GROSS OUTPUTS AT BASIC PRICES			
3	Estimates of Adjusted GVA at Producer's Prices	The current official CAMSNA's GVA estimates at Basic Prices were revalued to GVA at Producer's Prices by apportioning given totals on Product taxes, Subsidies and FISIM to each industry sector. Proportional allocation was done in the absence of appropriate indicators.	- Cambodia National Accounts 2005 (CAMSNA2005) - MEF, TOFE2005
4	Gross Outputs at Producer's Price	Formula used to get GO at producer's prices is GVA at producer's prices divided by GVAR. GVAR of each industry is determined as follows: - GVARs for Industry codes 01, 02, 05, 10-14, 45, 60-64 were borrowed from Vietnam IO 2005 - GVARs for Industry codes 15-37, 40, 41, 50-52, 55 were derived from the SIE2000 for Manufacturing, hotels & restaurants - GVARs for other industries were derived from available National Accounts estimates on GO & GVA.	- VNIO-2005 - SIE-2000 for Cambodia - National Accounts data 2005 on GVA/Outputs
5	Gross Output at Basic Prices	To estimate the GO at basic prices, the formula applied is: GO at producer's prices minus : Taxes on products Plus : Subsidies and FISIM	
6	Complete Table Matrix of GO at Basic Prices	- In the absence of product-mix data on output structures, the construction of the GO or MAKE matrix was done on the assumption that each industry produces a single product, hence only the diagonal elements of the GO or MAKE matrix is filled up. This restrictive assumption was adopted because secondary production such as in the SIE could not be distinguished from characteristic production, defined as the major economic activity with the largest value of production.	
III. MATRIX OF INTERMEDIATE CONSUMPTION (IC) AT PURCHASER'S PRICES			
7	IC at Producer's Prices	To derive IC at producer's price, the formula applied is : GO at producer's price minus Adjusted GVA at producer's prices	Estimates
8	Matrix of IC at Producer's Prices	- The matrix table of IC at producer's prices was estimated using "borrowed" intermediate input structures from VN's 2005 IO table because of the absence of sufficiently detailed information in Cambodia's survey such as the SIE. - These input coefficients (total VN IC = 1) were applied to estimated Cambodia's aggregates on intermediate consumption by industry, derived as: $IC_j^{prod} = GO_j^{prod} - GVA_j^{prod}$ where: IC_j^{prod} is total intermediate consumption of	Intermediate Inputs Coefficient matrix Vietnam 2005 Estimates of GO distributed ratios of industry i.

		<p>industry j at producer's price, GO_j^{prod} is total gross output of industry j at producer's price as estimated in II.4 and GVA_j^{prod} is total GVA of industry j at producer's price.</p> <ul style="list-style-type: none"> - The breakdowns for each column IC_j^{prod}, which, in this case, covers 48 ISIC 2-digit industries, were calculated by applying VN's IC coefficients that were first re-aligned to conform with CPC 2-digit product classification, in this case, 49 product sectors. That is, in matrix format: $IC^{CAM} = A^{VN} * TIC^{CAM}$ <p>where: IC^{CAM} is the estimated (49x48) matrix of CAM IC, A^{VN} is VN IC coefficients (total = 1), and TIC^{CAM} is diagonal matrix whose diagonal elements are the estimated total CAM IC values.</p>	
9	IC at Purchaser's Prices	IC at purchaser's prices is estimated as: IC at producer's price plus Trade and Transport Margins.	

IV. MATRIX OF TRADE AND TRANSPORT MARGIN

10	Trade and Transport margin ratios	<ul style="list-style-type: none"> - Estimates of trade and transport margins (Tdm & Tnm) for Cambodia's industries were done by deriving from Thailand's 2000 I-O table, the required trade and transport margin ratios. These 'borrowed' ratios were used due to basic data unavailability. Studies show, however, that trade & transport mark-ups in the region appeared to be comparatively within reasonable range. - Trade and transport margin ratios were computed by dividing value of transaction of product, x_i, by its recorded trade and transport margin. That is, <ul style="list-style-type: none"> 1) $WTdR_i^{THA} = WTdM_i^{THA} / X_i^{THA}$ for wholesale trade; 2) $RTdR_i^{THA} = RTdM_i^{THA} / X_i^{THA}$ for retail trade; and 3) $TnR_i^{THA} = TnM_i^{THA} / X_i^{THA}$ for transport margin. - Trade & transport margin ratios are calculated for material products only, i.e. output of any service sector valued at producer's price is equal to its output valued at purchaser's price. 	'Borrowed' ratios on trade and transport margins from Thailand's IO table for 2000.
11	Calculation of IC Matrices on Trade and Transport Margins	<ul style="list-style-type: none"> - Based on the 'borrowed' ratios, calculated IC matrices were made available for: 1) Wholesale trade margin, 2) Retail trade margin and 3) Transport margin. - Values of trade and transport margins were estimated as: <ul style="list-style-type: none"> 1) $WTdM_i^{CAM} = WTdR_i^{THA} * X_i^{CAM}$ for wholesale trade; 2) $RTdM_i^{CAM} = RTdR_i^{THA} * X_i^{CAM}$ for retail trade; 3) $TnM_i^{CAM} = TnR_i^{THA} * X_i^{CAM}$ for transport (freight). 	<ul style="list-style-type: none"> - Estimates - Estimates

		where: X_i^{CAM} is estimated CAM's output of product i at producer's price	
12	Adjusted IC at Purchaser's Prices	IC at Producer's Prices is adjusted by adding the Value of Trade and Transport margins on material products of agriculture, forestry, fishing, mining and manufacturing industries to get the IC at Purchaser's Prices. For the services sectors, no trade and transport margins are applied.	Estimates
13		Complete Table Matrix of IC at Purchaser's Prices	

V. ISSUES AND PROBLEMS

	<ol style="list-style-type: none"> 1) The use of the proportional method to adjust official estimates of GVA by economic activity valued at basic prices into producer's price values needs further review. For example, proportional allocation of given totals on product taxes, subsidies and FISIM using GVA as weights may not be as accurate if appropriate indicators would have been made available. 2) Compilation of the GO or MAKE matrix was constrained by lack of sufficient data details. For example, ratio indicators for distinguishing secondary from primary or characteristic production by industry are not available, hence the use of restrictive assumption that an industry produces only a single product, i.e. its characteristic product; 3) Construction of the IC matrix was also hampered by insufficient data on intermediate cost of production or input structures by CPC 2-digit product grouping, hence the need to 'borrow' IC indicator ratios from available I-O data in neighboring countries such as Vietnam. 4) Estimation of satellite tables on (1) trade margins and (2) transport (freight) mark-ups was done using 'borrowed' margin ratios that were derived from Thailand's 2000 I-O table on the assumption that Cambodia's & Thailand's marketing & distribution schemes are, in principle, similar. Again, this procedure was resorted to because of lack of data. <p>It can then be said that the above issues/problems boil down to the utter lack of the basic data that could have been solved if the conduct of economic surveys and census has been done periodically, complemented by the conduct of ad hoc surveys to collect detailed information that are relevant to the construction of an accurate and reliable SUT table.</p>
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VI. RECOMMENDATIONS/FUTURE DIRECTIONS

	<p>A) Recommendations</p> <ol style="list-style-type: none"> 1) The author recommends that donor institutions should help in building the capacity of developing countries such as Cambodia, in terms of technical as well as financial, to develop, improve and maintain the periodic compilation of SUT; 2) Statistical coordination arrangements between agencies involved should be institutionalized to improve data gathering and dissemination procedures; 3) The conduct of economic surveys and censuses should be given the same priority as the other important types of statistical surveys. <p>B) Future Directions</p> <p>To complete the SUT table, the following activities need to be undertaken in the next work phase:</p> <ol style="list-style-type: none"> 1) Compilation of the Final Demand Matrix
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2) Compilation of satellite table on Imports

It is expected that, in the final phase of this project, the balancing and revision work shall be done, the fact that GO and IC matrices presented in this initial stage report are considered to be preliminary.