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ON SYSTEMATIC LAND TITLING IN RURAL CAMBODIA: ITS IMPACT ON RICE YIELD AND CROP REVENUE

Introduction

Agriculture is the traditional mainstay of Cambodia's economy as the vast majority of its population live in the countryside. Land remains central to the livelihoods of rural people, not simply as a source of physical security and economic subsistence but also as an important means of wealth accumulation (Deininger and Binswanger 1999).

Until 2001 only 10 percent of the land in the whole country had a title. Thus, in 2002, the Cambodian government embarked on a new systematic land titling program with support from development partners such as the World Bank and Asian Development Bank, and various countries including Germany, Finland, Sweden, Denmark, Japan and South Korea (Thomson 2010). The objective of this ongoing land titling effort is to provide increased land tenure security nationwide and stimulate the rural land market (Sar 2010). The new land program has also simplified land registration proceedings for landowners.

It is important to understand how the implementation of large-scale formalisation of land tenure is affecting agricultural productivity in rural areas. Yet, some 15 years later, the topic remains seriously underresearched. The objective of this study therefore is to investigate the impact of the land titling program in rural Cambodia. An overview of the historical patterns of land tenure in Cambodia and a short literature review on land tenure and titling provide some of the background and motivation for this study. A summary of the key findings and discussion of the effects of the titling program on agricultural outcomes follows. The final section concludes.

Secure land tenure matters for loan collateral, business, housing, rice yield and crop revenue. Kandal, May 2015

In this Issue

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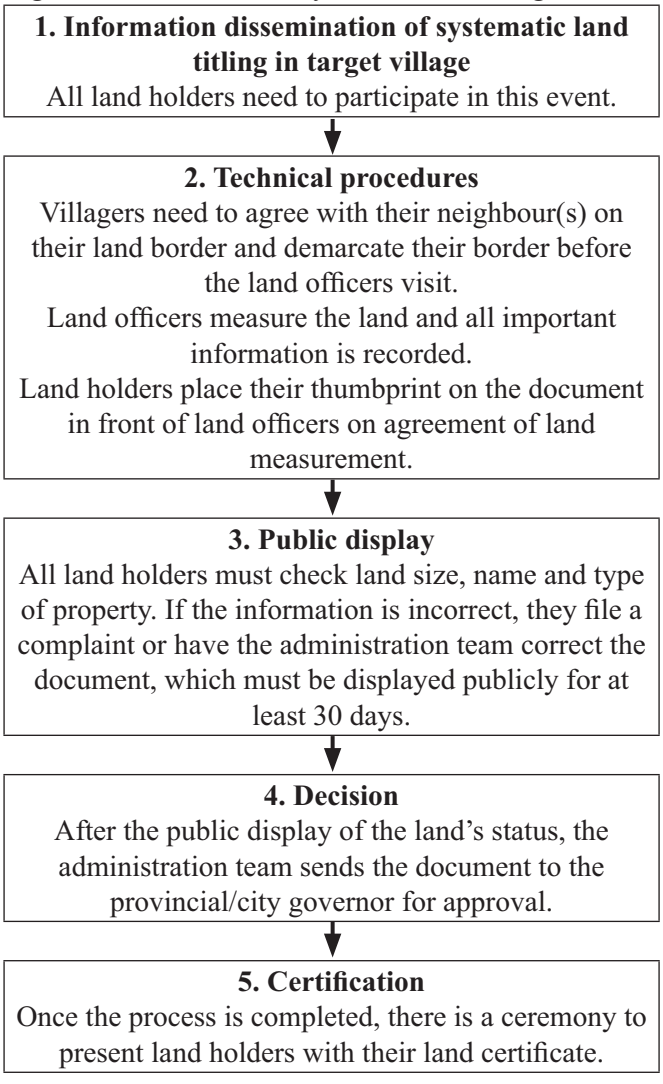
History of land ownership

Prior to French colonisation, common people could practically possess, inherit, sell and cultivate land; however, all land belonged to the King and there was no formal registration of private land rights. Towards the end of the 19th century, the French began institutionalising land ownership to reduce the power of the royal court and generate tax revenues (Chandler 2008,174). Although the Land Law was introduced in 1884, it was not put into practice until the 1930s when most rice fields were registered as private property and landholders could sell their land in their own right.

This system of land registration continued after independence until 1975. The 1962 national census recorded 800,000 agricultural plots, 84 percent of which were privately owned (Sar 2010). Under the ultra-collectivism promoted by the Khmer Rouge from 1975 to 1979 (Frings 1994), the private ownership of land was abolished and most land documentation destroyed (Hap 2010). The substitution of the collective for private ownership was short-lived, however. The need for economic liberalisation became increasingly clear, leading to the reinstitution in 1989 of private property rights (Gottesman 2004). This was followed in 1992 by reform of the 1884 Land Law. Importantly, the reform provided neither an effective land management system nor comprehensive information about individual ownership. Despite the establishment of a new democratic regime in 1993, there was no further significant legal land reform until 2001, when an amendment to the Land Law was passed. According to HE Senior Minister Chea Sophara, Ministry of Land Management, Urban Planning and Construction (VOA 2016), to date, 4 million (57 percent) of a total 7 million land parcels in Cambodia have been registered.

The 2001 ammendment to the Land Law classified land ownership into three types: state, private and collective. State land includes all lands that have not been privately allocated. There are two types of state land: state public land (for public benefit) and state private property (owned by the state). State public land is used for public interest and includes lakes, rivers, forests, designated nature reserves, archaeological, cultural and heritage sites, and public buildings such as hospitals, schools and administration buildings. State private property, on the other hand, can be sold, transferred or leased, and can be subject to other legal contractual transactions such as economic land concessions and social land concessions for up to 99 years (Cambodian Center for Human Rights 2013). Private property can be used for crop production or personal residence, and can involve individual or joint ownership. Collective land consists of monastery property and the property of indigenous communities that "reside in the territory of the Kingdom of Cambodia whose members manifest ethnic, social, cultural and economic unity and who practice a traditional lifestyle, and who cultivate the lands in their possession according to customary rules of collective use", according to Land Law, Article 23 (CDC, CIB and CSEZB 2016).

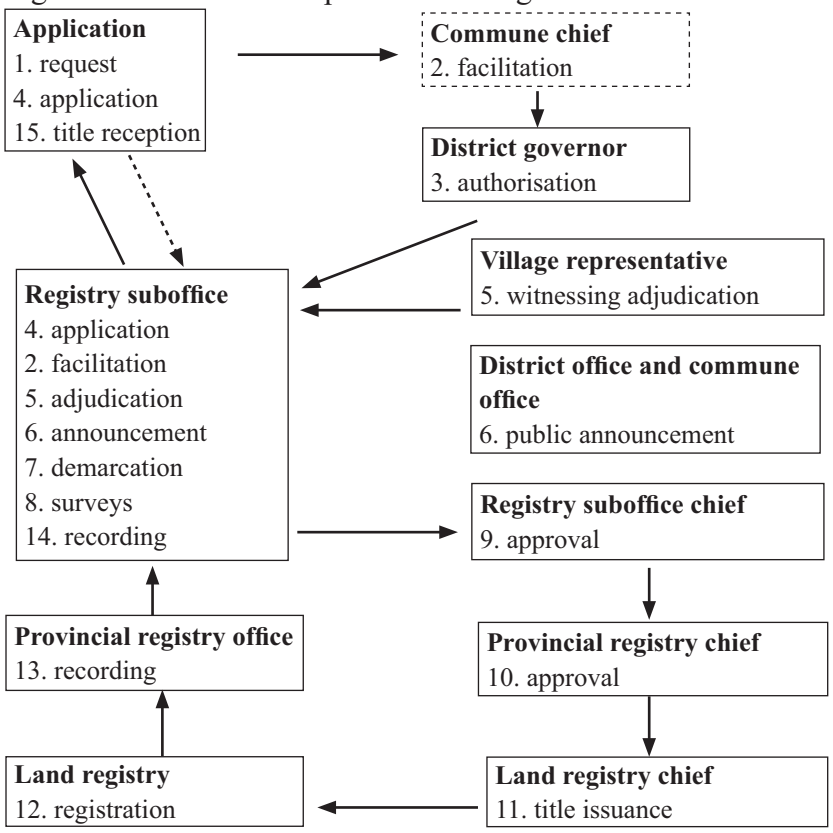
Figure 1: Procedure of systematic land registration



Source: MLMUPC 2013

There are two types of land registration in Cambodia: systematic and sporadic. Systematic land registration is implemented village-by-village

Figure 2: Procedure for sporadic land registration



Source: Torhonen 2001

and within a certain timeframe, while sporadic land registration allows individuals to apply for a land title at any time. Systematic land registration is initiated by government, while sporadic registration is at the request of individual landowners.

Literature review

Neoclassical economic theory states that a piece of land without formal legal recognition is like "dead capital" (Soto 2000). To change this dead capital into live capital, land owned by individuals should be titled. Soto (2000) puts forward three main arguments for the issuance of legal land titles to the poor. First, people need to feel that they have secure tenure on their land so they can invest in their business and housing. Second, legal land tenure turns land into a liquid asset that can be used as loan collateral. Third, through systematic land titling, the provision of individual freehold titles can enable developing countries to move out of poverty. As a result many countries have implemented land titling programs. Some empirical works find that systematic land titling increases agricultural output, investment and credit use; however, other studies find no effects at all, or mixed results at best.

For instance, using a difference-in-differences method to evaluate Peru's systematic land titling program implemented in 1994-2000, Fort (2007) finds a positive effect on individual investment. Similarly, Deininger and Jin (2006) demonstrate the positive effect of land tenure on investment in Ethiopia. In Vietnam, Do and Iyer (2008) find that land reform through systematic land registration has a statistically significant impact on households' decisions to make long-term investments in agriculture.

By contrast, Borrows and Roth (1990) find no significant differences in investment and productivity between titled and non-titled plots in Kenya, Uganda and Zimbabwe. They contend that the supply and demand for investment is low due to market imperfections, and that potential investments are held back by a lack of institutional rules to protect individuals' rights to the access and use of their property.

The literature provides some evidence for the positive impacts of legal land title on investment. A study by Markus and Udry (2008) in Ghana finds that secure land tenure affects land investment and land fertility. In Brazil, the possession of a formal title is associated with increased investment in land and growth in land values (Alston, Libecap and Schneider 1996). Galiani and Schargrodsky (2010) show how urban land titles encourage more housing investment. And Markussen's (2008) research in Cambodia demonstrates that property rights have a positive and statistically significant effect on agricultural productivity and land prices.

Methodology

Data and descriptive statistics

I use data from Cambodia Socio-Economic Surveys 2004 and 2008, and information from the Ministry of Land Management, Urban Planning and Construction and the General Department of Cadastre and Geography on systematic land registration in 338 villages between 2004 and 2008.

The treatment group comprises villages where land titles were issued between 2005 and 2007, and the control group consists of villages that

were not covered by the land titling program. After ensuring balance in the baseline characteristics of both groups, there are 14 treatment villages (129 households) and 148 control villages (1775 households). Around 80 percent of households have a male household head, and average household head age is around 46 years. The dependency ratio of around 78 percent is quite high. Households own on average 0.6 ha of agricultural land most of which is wetland, and attain an average rice yield of 1.6 t/ha (Table A1).

Modelling agricultural productivity and income impacts

To determine the impacts of the land titling program on farm households' agricultural productivity and income, I perform ordinary least squares regression as expressed in the following form:

$$log y_{hvt} = \alpha + \gamma treatment_v + \tau year2008_t + \delta(treatment_v * year2008_t) + \beta X_{hvt} + \varepsilon_{hvt}$$

where y_{hvt} is the outcome variable of interest such as rice yield or crop revenue in each individual household h and village v at time t; $treatment_v$ is a dummy variable for treatment villages; $year2008_t$ is the year dummy; $treatment_v * year2008_t$ is the dummy variable for interactions between treatment and year; δ is the coefficient of interest which captures the impact of the land titling program; X_{hvt} are other control variables; and ε_{hvt} are error terms.

Following Angrist and Pischke (2009), the key assumption in the difference-in-differences evaluation method is:

$$E[Y_{0hvt}|v,t] = \gamma_v + \tau_t$$

where v denotes treatment village (1 for treatment, 0 otherwise) and t denotes time (2004 before the program, 2008 after the program). The key identifying assumption is that in the absence of titling, or at the beginning of the program, trends in agricultural productivity would have been the same in treatment and control villages.

In the regression, plot characteristics include land type and irrigated plot dummy, and village characteristics capture both government and NGO-run village-level development projects and government technical support for crop production, livelihoods and fisheries. Household characteristics include household head age, gender and literacy, household size and dependency ratio, loan type and plot size. Because the data is pooled cross-sectional data for two years, to control for any variation between provinces and across time, I add to the equation two variables: province fixed effects, and province fixed effects multiplied by time fixed effects. Standard errors are also clustered at village level.

Empirical results

An important potential effect of the systematic land titling program is increased agricultural productivity. Table A2 presents the estimation of the village-level effects of the program on rice output and crop revenue.

First, to examine effects on rice productivity, I model the change in output at plot level. Rice productivity in the treatment villages is 65 percent lower than in the control villages; the difference is statistically significant at the 10 percent level (column 1). However, when controlled for village fixed effect, which is a richer specification, the impact in treatment villages is very weak and the result is not statistically significant (column 4). Second, the percentage change in crop revenue in the treatment villages is 2.8 percent (column 5), but 1.9 percent (column 8) when controlled for village fixed effect; the difference is not statistically significant, however.

The results provide no evidence that the land titling program has significant positive effects on rice yield and crop revenue. Thus, the systematic land titling program shows no statistically significant effect on agricultural output.

Conclusion

Contrary to much of the literature, the study findings do not support the hypothesis that systematic land titling has positive impacts on agricultural output at plot level. The contribution of the national land titling program to agricultural productivity growth in Cambodia so far appears to have been negligible.

Taken at face value, not achieving the expected outcomes is perhaps disappointing. However, Cambodia's experience is not dissimilar to that of Kenya, Uganda and Zimbabwe, where land reforms were also found to have little impact on agricultural production (Borrows and Roth 1990). Importantly,

care must be taken to not let complacency set in. Although the program has been ongoing since 2002, the issuance of formal rural land titles remains limited. This calls for accelerated land titling, with a special focus on vulnerable rural households, particularly smallholders, to both broaden land ownership and reinforce the benefits of secure land tenure.

On a final note, the relationship between land tenure and agricultural growth is a new area of research in Cambodia and research-supported knowledge is limited. Future research efforts might merit a cross-sectional study over an extended timeline.

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Appendix

Table A1: Descriptive key variables, 2004 and 2008

Control group variables					2004 & 2008
	Mean	SD	Min	Max	N
Sex of household head (1=male)	0.81	0.40	-	-	2638
Age of household head (years)	46.19	13.98	19	88	2638
Household head can read and write (%)	0.69	0.47	-	-	2638
Household size (persons)	4.95	1.96	1	14	2638
Dependency ratio (%)	0.78	0.69	0	5	2611
Formal loan per household (USD)	0.12	0.32	-	-	2638
Informal loan per household (USD)	0.28	0.44	-	-	2638
Area of plot (ha)	0.70	0.91	0.001	15	5221
Rice production (t/ha)	1.74	1.08	0	5	3051
Revenue (USD/ha)	388.70	498.01	0	8981.35	5145
Types of land (ha)					
Wetland	0.48	0.50	-	-	5221
Dryland	0.15	0.35	-	-	5221
Both wet and dryland	0.04	0.19	-	-	5221
Chamkar	0.24	0.42	-	-	5221
Kitchen garden	0.03	0.17	-	-	5221
Other	0.08	0.26	-	-	5221
Irrigated plot (ha)	0.45	0.49	-	-	5221
Village projects (% of total)					
Gov: agricultural development	0.10	0.30	-	-	293
Gov: infrastructure development	0.23	0.42	-	-	293
Gov: water development	0.09	0.28	-	-	293
NGO: agricultural development	0.14	0.34	-	-	293
NGO: infrastructure development	0.11	0.30	-	-	293
NGO: water development	0.08	0.28	-	-	293
Gov: technical support for crops, livestock or fisheries	0.10	0.20	-	-	293
Treatment group variables					2004 & 2008
	Mean	SD	Min	Max	N
Sex of household head (1=male)	0.80	0.41	-	-	197
Age of household head (years)	45.36	14.45	21	85	197
Household head can read and write (%)	0.78	0.42			197
Household size (persons)	4.77	1.73	1	12	197
Dependency ratio (%)	0.79	0.69	0	4	194
Formal loan per household (USD)	0.19	0.39	-	-	197
Informal loan per household (USD)	0.26	0.44	-	-	197
Area of plot (ha)	0.55	1.28	0.003	16	411
Rice production (t/ha)	1.52	0.71	0	5	242
Revenue (USD/ha)	370.33	504.77	0	6150.06	381
Types of land (ha)					
Wetland	0.60	0.48	-	-	411
Dryland	0.07	0.25	-	-	411
Both wet and dryland	0.03	0.16	-	-	411
Chamkar	0.11	0.31	-	-	411
Kitchen garden	0.01	0.11	-	-	411
Other	0.20	0.37	-	-	411
Irrigated plot (ha)	0.32	0.47	-	-	411
Village projects (% of total)					
Gov: agricultural development	0.15	0.36	-	-	27
Gov: infrastructure development	0.34	0.49	-	-	27
Gov: water	0.11	0.33	-	-	27
NGO: agricultural development	0.22	0.44	-	-	27
NGO: infrastructure development	0.11	0.33	-	-	27
NGO: water	0.19	0.40	-	-	27
Gov: technical support for crops, livestock or fisheries	0.18	0.25	-	-	27

Note: 1 dollar=4065 riels in 2008; consumer price index in 2004=81 and in 2008=166 (index reference period 2006=100).

Table A2: Results of ordinary least squares regression for rice output and crop revenue

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Rice output per hectare				Crop revenue per hectare			
Title	-0.0481	-0.133	0.0292	---	0.0255	-0.0170	0.207*	---
	(0.160)	(0.125)	(0.106)	---	(0.145)	(0.162)	(0.123)	---
Year 2008	0.157**	0.191*	0.190	0.265**	0.459***	0.578***	0.417**	0.601***
	(0.0738)	(0.112)	(0.168)	(0.122)	(0.0672)	(0.200)	(0.205)	(0.162)
Interaction: treatment and year 2008	**-0.651***	**-0.251**	**-0.0612**	**0.0086**	**0.0278**	**0.0495**	**0.0045**	**-0.0192**
	(0.377)	**(0.265)**	**(0.176)**	**(0.104)**	**(0.167)**	**(0.188)**	**(0.159)**	**(0.126)**
Constant	-0.275***	0.384***	-2.227	-0.988	13.68***	13.31***	14.52**	14.39***
	(0.0701)	(0.100)	(3.979)	(3.513)	(0.0603)	(0.132)	(6.209)	(4.317)
Observations	3,227	3,227	3,198	3,198	5,052	5,052	4,997	4,997
R-squared	0.015	0.080	0.593	0.676	0.039	0.110	0.211	0.348
Province fixed effects	no	yes	yes	no	no	yes	yes	no
Province time fixed effects	no	yes	yes	yes	no	yes	yes	yes
Village fixed effects	no	no	no	yes	no	no	no	yes
Control for village characteristics	no	no	yes	no	no	no	yes	no
Control for plot and household characteristics	no	no	yes	yes	no	no	yes	yes

Note: Robust standard errors (in parentheses) are adjusted for village clustering in columns 1, 2, 3, 5, 6 and 7 and household clustering in columns 4 and 8.
Statistically significant at the *10%, ** 5% and *** 1% level.
Only households who own or operate land for agricultural purposes are included; net revenue per hectare of harvested land is in logarithm form.
Included in the estimation are: type of land; village infrastructure projects; household head characteristics; farmland size; dummy years (2004, 2008); plots that have been cultivated; and year of land title issuance.
The unit of observation is farm plot.

An Empirical Analysis of Factors Determining Choices between Different Subcategories of Off-farm Activities in Rural Cambodia

Introduction

The majority of Cambodia's poorest and most vulnerable people live in rural areas where most of them depend on agriculture for their livelihoods. Despite drastic agricultural transformation over the last 15 years, the sector can neither absorb the rural workforce nor create enough jobs. It currently employs less than 60 percent of the rural labour force (CDRI 2013).

The main challenges facing the agriculture sector are low productivity, limited extension services, poor market integration of smallholders, weather-dependent production, climate change and increasing landlessness. In addition, agricultural seasonality means that farmers have to find jobs outside of their farms during the off-season. Agriculture-based livelihoods that are already vulnerable are therefore even more unreliable and risky during slack periods.

To reduce livelihood vulnerabilities and survive agricultural risks, many rural people, especially smallholders and landless families, have to participate in off-farm income generation activities (wage- and/or self-employment) in either agricultural or non-agricultural sectors. Yet, due to the absence of local small and medium-sized enterprises (SMEs), largely as a result of sluggish rural economic growth, there are limited local employment opportunities. This situation pushes rural people to migrate to urban centres and overseas to seek work. On the other hand, high returns to labour in non-agricultural sectors may attract rural households to engage in non-farm income activities.

Households' off-farm work decisions then, may depend on various push and pull factors such as location, skills and wealth. Low-income households generally face higher levels of risk and have limited capacity to cope with income shocks. The off-farm income sources of poorer households are therefore expected to be more diversified than those of richer households.

Off-farm income-generating activities have gradually become a significant feature of strategy aimed at supplementing and diversifying rural livelihoods, improving rural welfare and, importantly, reducing agricultural risks. Rural household income diversification now receives great attention from policymakers. Better policies for creating off-farm jobs and improving agricultural risk management will require better understanding of the various push–pull factors and relative importance of those factors in influencing households' decisions to participate in off-farm activities.

The objective of this study, therefore, is to examine which factors determine off-farm participation choices in rural Cambodia. We briefly describe the data collection and analysis techniques used and the basic features of the data collected, and then discuss the estimation results for each variable separately. A summary of the key findings concludes.

Methodology

Data collection

This study uses data from a farm survey conducted in 2015 for a research project on off-farm income generation activities (FAO 2015). The survey was carried out in eight villages in Battambang, Kampot, Prey Veng and Kratie provinces, representing the Tonle Sap, coastal, Mekong plain, and plateau/mountain agroecological zones, respectively. In each village, 40 households (20 IDPoor and 20 non-IDPoor) were randomly selected for interview, giving a total sample of 320 farm households.

Variable selection

The dependent variable is participation in different types of off-farm activities. To account for its polychotomous (i.e. having more than two values) nature, the variable takes the value

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of zero if household members participate in no off-farm activities at all, 1 for agricultural employment only, 2 for non-agricultural employment only, 3 for both agricultural and non-agricultural employment, 4 for self-employment only, and 5 for both self-employment and wage employment. The literature about off-farm work participation decisions highlights the influence of basic household characteristics, household demographic and human capital characteristics, farm characteristics, non-labour income and local economic conditions. We therefore include these as independent variables.

Modelling off-farm labour supply

The off-farm labour supply of rural households can be expressed as a function of various independent variables including household characteristics, household head human capital characteristics, farm characteristics, non-labour income and local economic conditions. In line with Haile Abraha, Peerlings and Gardebroek (2008), this can be specified as:

$$\begin{cases} H^0 = f(P_q, P_x, \bar{A}, \bar{Y}, K, Z) & \text{if} \quad w > w^r \\ H^0 = 0 & \text{if} \quad w \leq w^r \end{cases}$$

When the off-farm wage (w) is greater than the reservation wage (w^r), farmers will participate in off-farm activities.

Modelling off-farm work participation

We use the off-farm labour supply function to model off-farm work participation, expressed in the following equation:

$$P(I = 1|x) = F(x'\beta)$$

where x is the vector of independent variables that are hypothesised to influence household off-farm participation, F is the cumulative distribution function, and β is the vector of coefficients.

The model can be rewritten in regression form as:

$$Y_i = \beta_i + \beta_{1i}X_1 + \beta_{2i}X_2 + \beta_{3i}X_3 + \beta_{3i}X_4 + \beta_{3i}X_5 + \varepsilon_i$$

where Y_i is the polychotomous dependent variable representing participation of a household in off-farm activities i, X_1 is the vector of household characteristics, X_2 is the vector of household head human capital characteristics, $X_3$is the vector of farm characteristics, X_4 is non-labour income, X_5 is the vector of local economic conditions, $\beta_i, \beta_{1i}, \beta_{2i}, \beta_{3i}, \beta_{4i}\ \beta_{5i}$ are the coefficients to be estimated, and ε_i is an error term with standard properties.

We use multinomial probit regression for analysis of household participation in different types of off-farm activities, the results of which are presented in Table 2. The multinomial probit model is theoretically more appropriate than the multinomial logit model because probit does not assume the independence of irrelevant alternatives (Chang and Mishra 2008).

Descriptive statistics

Both farm and off-farm incomes are important for the majority of rural households, and account for about 90 percent of total household income (FAO 2015). Three types of off-farm activities are identified as the main sources of off-farm income: agricultural employment, non-agricultural employment and self-employment.

Agricultural employment consists mainly of support activities to agriculture and post-harvest crop activities,[1] and partly of fishing, rice cultivation, perennial crop production, forestry and logging. Non-agricultural employment mostly entails jobs in clothing/garment manufacturing, grain mill products manufacturing, and construction. Self-employment mainly involves retail sales, services such as transport, and recreation; only a few make and sell handicrafts.

As Table 1 shows, 76 percent of all surveyed households had at least one member participating in off-farm activities. The participation rate in Kratie province is high (82.5 percent), whereas it is relatively low (70.2 percent) in Prey Veng province. Cash crop (rubber, pepper, cassava) farms are the engine of agricultural wage employment in Kratie, providing a source of income for 36.3 percent of households in the province. By contrast, in Prey Veng province, only 6.3 percent of households work in the agriculture sector; at 36.3 percent, the

1 Includes activities incidental to agricultural production and not undertaken for production purposes (e.g. field preparation, harvesting and pest control), support activities for animal production, and seed processing for propagation.

Table 1: Percentages of households with members involved in different types of off-farm activities by province and poverty status

	Battambang	Kampot	Kratie	Prey Veng	Poor	Non-poor	Total
No off-farm activities	24.9	23.8	17.4	29.8	20.01	27.65	24.1
Off-farm employment	75.1	76.3	82.6	70.2	79.99	72.35	75.9
Agricultural employment only	17.5	10.0	36.3	6.3	25.33	10.59	17.5
Non-agricultural employment only	22.5	30.0	12.5	36.3	21.33	28.82	25.3
Both agri and non-agri employment	7.5	5.0	11.3	10.0	13.33	4.12	8.4
Self-employment only	16.3	11.3	12.5	11.3	9.33	15.88	12.8
Both self- and wage employment	11.3	20.0	10.0	6.3	10.67	12.94	11.9

Source: Farm household survey 2015

biggest share of wage employment is in the non-agricultural sector.

About 34 percent[2] of surveyed households participate in non-agricultural activities (Table 1), the main type of off-farm employment in this study. The next most important type of off-farm activity for about 26 percent of households is agricultural employment. Agricultural jobs are mainly available within the village and province, and most are seasonal. Those employed in non-agricultural sectors work outside the village, either in the same or a different province.

Eighty percent of poor households and 72 percent of non-poor households engage in off-farm work. There are some notable differences between the types of off-farm activities they undertake. Agricultural activities are the main kind of off-farm work performed by poor households (39 percent), while non-poor households concentrate on non-agricultural work and self-employment.

Estimation results

This section discusses the regression results for household participation in off-farm activities, as presented in Table 2.

Household characteristics

We find that poverty has a significant negative impact on agricultural employment. This is consistent to some extent with the finding of Shi, Heerink and Qu (2007), that poor households are eager to find alternative sources of income. However, our model implies that poor smallholders and landless workers are only able to get jobs (both agricultural and non-agricultural) in rural areas. This might be due to the high dependency ratio of 0.9 and a lack of economically active household members to find work in towns or other areas.[3]

Asset-rich households have more opportunities for starting a business and becoming self-employed, or of finding non-agricultural work outside of their localities. In our model, the dummy variable for household poverty status (poor=0, non-poor=1) is not statistically significant for self-employment or non-agricultural employment. This indicates that poor and non-poor households are unlikely to be self-employed or employed in non-farm wage labour.

Household size has a significant positive effect on the probability of participation in off-farm activities for households that are able to participate in both agricultural and non-agricultural employment. This result is consistent with that of Leeuwen and Dekkers (2013): as the number of household members increases, the likelihood of households' participation in both agricultural and non-agricultural off-farm activities increases. Rural households need additional income to complement insufficient farm income.

The number of years households have lived in their village is statistically significant for self-employment, while the other kinds of off-farm activities have negative signs. Farmers are therefore strongly attached to farming activities, and farm income is very important for them. This suggests that off-farm income complements rather than competes with expected farm income.

2 Agricultural employment only (25.3 percent) plus both agricultural and non-agricultural employment (8.4 percent).

3 Household dependency ratio is calculated as the number of household members younger than 15 and older than 64 divided by the number of working household members aged 15-64 years.

Demographic and human capital characteristics

Household head age has a significant positive effect on agricultural employment, and lifecycle effects (age-squared) has a significant negative effect. Age is strongly and positively correlated with the probability of participation in off-farm agricultural employment. But as household members get older, the probability of participating in agricultural wage labour decreases significantly. Our finding is consistent with Haile Abraha, Peerlings and Gardebroek (2008), that younger household heads are more likely to need and be able to work off-farm.

Household head gender does not have a significant impact on smallholders' and landless workers' participation in off-farm activities.

Household head education does not have a significant impact on agricultural employment, which is consistent with evidence in the literature of a weak relationship between education and agricultural employment. Education has a positive though not statistically significant effect on self-employment, and a statistically significant positive effect on both self- and wage employment at the 10 percent level. Household heads with higher education are usually more productive and able to do business or find more off-farm work.

Training also has a significant positive effect on self-employment. Those who have received vocational training are more likely to be able to run a business or become self-employed, but those who have no special skills are unlikely to do so. A lack of skills was reported to be a primary barrier to self-employment; as a result, households end up choosing to engage in off-farm activities.

Farm characteristics

Household productive assets, specifically cultivated land/farm size, is another important push factor behind households' participation in off-farm activities. Farm size has a significant negative effect on non-agricultural employment and both self- and wage employment at the 5 and 1 percent levels, respectively.

Because income from crop production is not enough to cover their daily living needs, smallholders and landless farm workers are likely to participate in non-agricultural employment only or both agricultural and non-agricultural employment. Farm income from livestock, fishing and forestry also has a significant negative effect on participation in off-farm activities. This confirms similar results commonly found in the literature, that increases in income from farming activities are likely to reduce participation in off-farm activities.

Local economic conditions

Economic push and pull factors play an important role in households' off-farm work decisions. Paddy price, the proxy for a perfect agricultural output market, has a significant negative effect on non-agricultural employment at the 5 percent level. Higher income from wet season rice crops due to higher paddy prices decreased the probability of households' participation in non-agricultural employment. This indicates that market prices play a significant role in determining households' participation in off-farm activities.

Furthermore, the financial market variable, using loan interest rate as a proxy, is not significantly associated with any of the five types of off-farm activities. Although not statistically significant, the sign of the effect of loan interest rate is very interesting. We find a negative effect on self-employment, suggesting the higher the interest rate the lower the probability of households setting up a business or becoming self-employed. In contrast, we find a positive association with non-agricultural employment.

This result could imply that an increase in loan interest rate might increase the probability of participation in non-agricultural activities. Because most rural farmers use credit to finance investments in agricultural production, an increase in loan interest rate would reduce farm profits, in turn forcing households to find alternative sources of income from non-farm wage employment. Also, some 58 percent of surveyed households said they cannot become self-employed or start a business because they lack investment capital.

Village-level factors and location

The estimated coefficient of the location dummy variable for Kratie is positive and statistically significant for agricultural employment only and non-agricultural employment only. This implies that village-level factors such as market access and economic development contribute to the relatively high probability of participation in agricultural

Table 2: Multinomial probit regression results of household participation in different types of off-farm activities

	Dependent variable: households' participation in off-farm activities									
	Agricultural employment		Non-agricultural employment		Both agri and non-agri employment		Self-employment		Both self- and wage employment	
	Coef.	z	Coef.	z	Coef.	z	Coef.	z	Coef.	z
Household characteristics										
hh_poor	-1.0450***	-3.41	0.1393	0.5	-0.8985***	-2.53	0.0444	0.15	-0.4783	-1.44
hh_size	0.0475	0.53	0.1032	1.27	0.3486***	3.54	-0.1389	-1.53	0.0909	1.04
hh_year_vil	-0.0130	-0.89	-0.0171	-1.31	-0.0057	-0.36	-0.0333*	-2.26	-0.0044	-0.3
Demographic and human capital characteristics										
hhhead_sex	0.3797	1.04	0.2619	0.8	0.6004	1.45	-0.0008	0	0.5000	1.24
hhhead_age	0.1557***	2.51	0.0655	1.14	0.0808	1.08	0.0830	1.44	0.2174***	2.84
hhhead_age2	-0.0018***	-2.97	-0.0008	-1.34	-0.0009	-1.25	-0.0009	-1.54	-0.0019***	-2.76
hhhead_edu	-0.0765	-1.56	-0.0225	-0.54	-0.1169**	-2.09	0.0059	0.13	0.0793*	1.61
hhhead_tvet	0.2053	0.48	0.0715	0.21	-0.5505	-0.88	0.7693**	2.14	0.8273***	2.09
Farm characteristics										
cultivated_land	0.0263	0.32	-0.2311**	-2.03	-0.3229*	-1.79	0.0121	0.15	-0.4687***	-3
tincome_livestock	0.0002	0.32	0.0002	0.28	0.0005	0.59	0.0009	1.18	0.0009	1.39
tincome_fisheries	-0.0001	-0.09	-0.0025*	-1.68	-0.0014	-1.03	-0.0011	-0.37	-0.0007	-0.38
tincome_forestry	-0.0052*	-1.66	-0.0021	-0.75	-0.0052*	-1.8	-0.0081***	-2.62	-0.0044	-1.43
Local economic conditions										
price_wetpaddy	-0.0010	-0.2	-0.0083**	-1.93	-0.0067	-1.35	-0.0035	-0.72	-0.0121**	-2.43
rate_loan	-0.0812	-0.84	0.0514	1.06	-0.1637	-1.4	-0.0734	-0.71	-0.0831	-0.62
Battambang	0.6252	1.46	-0.1410	-0.4	-0.2294	-0.5	0.3949	0.97	0.5329	1.19
Kampot	0.3139	0.43	0.7050	1.33	0.1126	0.17	0.2123	0.34	2.1248***	3.46
Kratie	1.4475***	2.7	-1.0022**	-1.93	-0.3322	-0.58	0.4890	0.84	0.0933	0.15
Constant	-1.6130	-0.37	6.7087	1.74	4.2204	0.85	3.0651	0.72	4.3444	0.9
No. of observations	320									
Wald chi2(85)	238.0									
Log pseudolikelihood	-452.1									

Note: Statistically significant at the *10%, **5% and ***1% level.

employment in Kratie province; these factors also have a significant but negative effect on non-agricultural employment. The two villages surveyed in Kratie province are relatively remote, and many industrial and cash crops (rubber, cassava, cashew nut, pepper and legumes) are grown in their vicinity. This explains why more households in Kratie province engage in farm employment than in non-farm employment.

The dummy coefficient for Kampot province has a significant positive effect on both self- and wage employment, suggesting a relatively high probability of both self- and wage employment.

Summary

Off-farm and farm work are the main sources of household income. Almost 76 percent of the households surveyed participate in some form of off-farm income-generating activity. Non-agricultural employment is the main source of off-farm income, followed by agricultural employment and self-employment.

Empirical analysis reveals that poor households are more likely to participate in agricultural employment or rural non-agricultural employment than non-poor households. This is probably because poor households have few economically active labourers, as indicated by the high dependency ratio, and therefore cannot access other types of off-farm activities especially outside of the village.

Non-poor households tend to engage in various types of off-farm employment or a combination of self- and off-farm wage employment. The negative sign for the correlation between how long households have lived in the village and off-farm employment suggests the strong attachment of rural households to farming activities. If farm income alone provides sufficient livelihood, rural households are more likely to focus on farming than off-farm activities: they prefer to live in their village rather than migrate to find work.

Of the household demographic and human capital characteristics, household head age and training have statistically significant effects on participation in off-farm activities. Training also plays a vital role in starting a business or going self-employed, and in gaining access to off-farm wage employment. Household wealth, especially cultivated land size, is an important determinant in households' off-farm employment decisions. Smallholders and landless families are more likely to participate in non-farm employment.

Finally, local economic conditions such as market access, economic development and geographic location also influence (as pull factors) households' participation decisions in off-farm activities. Most importantly, we find a strong negative relationship between agricultural output markets and non-agricultural employment. A rise in the price of paddy rice increased income from crop production, which in turn decreased households' participation in non-agricultural employment. More agricultural jobs are available in areas where many industrial and cash crops are grown, for instance Kratie province. Similarly, locations where economic activities are concentrated, such as Kampot, are likely to offer more self-employment and business opportunities.

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The Obstacles to Promoting Local Currency: A Cross-Country Study of Bolivia, Ecuador and Peru

Introduction

Cambodia became dollarised in the early 1990s and is now regarded as the most highly dollarised economy in Asia (Duma 2011). Despite certain advantages such as financial deepening, trade facilitation, signalling effects for macroeconomic management and monetary stability rendering incentives less necessary, dollarisation has caused some problems that need policy attention. Dollarisation makes monetary policy less effective. It limits the role of the National Bank of Cambodia (NBC) as lender of last resort, undermining its control of domestic monetary conditions. In addition, currency is a symbol of sovereignty. Dependence on the dollar means that Cambodia loses out on seignorage revenue; instead, the benefits accrue to the US government (Tal and Dabadie 2007). Dollarisation has both advantages and disadvantages, but comparative cost-benefit analyses show that costs outweigh benefits (Kang 2005; Tal and Dabadie 2007).

Successive Cambodian administrations have proved capable of maintaining exchange rates, price stability and economic growth (Menon 2008). Yet, although the NBC reissued the riel three decades ago, public confidence in local currency has not yet been restored, and Cambodia is still struggling to promote the riel against foreign currencies. This situation reveals a gap in existing research. Previous studies have largely overlooked the question of why Cambodia has failed fully to promote the riel. This article aims to contribute to the discussion by drawing lessons from the Latin American experience, specifically from Bolivia, Ecuador and Peru. It starts with a historical overview of the riel, followed by the current state of affairs and efforts to de-dollarise. It then discusses the experience of Bolivia, Ecuador and Peru and lessons for Cambodia.

Shocks hitting the riel

National currency abolished (1975-79)

On coming to power in 1975, the Khmer Rouge regime demolished the National Bank and abolished money (Prasso 2001). Riel banknotes were reduced to worthless pieces of paper blowing along the streets. Because there were no banknotes, there were no financial transactions. The banking system was completely destroyed.

Distrust of central planning (1979-89)

With the economy in very poor condition and the experience of the civil war still fresh in people's minds, confidence in the riel hit rock bottom. Rather than money, rice was commonly used to buy other goods, but rice itself was bought with gold (Prasso 2001). It was essentially a barter system. Although centrally planned economies commonly restrict the use of foreign currencies, the US dollar and Thai baht were widely accepted and used in Cambodia because citizens regarded them as a safe means of storing value (Tal and Dabadie 2007).

Economic and political instability—deficit, dollar influx and hyperinflation (late 1980s-early 1990s)

Limited government revenues during the 1990s led to budget deficits, which were financed to a large extent by the NBC. Indeed, NBC monetary emissions accounted for 20 percent of public expenditure in 1989 and increased to 40 percent in 1990 (Irvin 1993). Then inflation started, culminating in three-digit hyperinflation in 1992; the riel's value against the dollar depreciated sharply from 800 in 1990 to 2600 in March 1992 (Irvin 1993). The consequent loss of purchasing power shattered public confidence in the riel.

Nonetheless, the domestic political situation was improving, marked by the signing in 1991 of the

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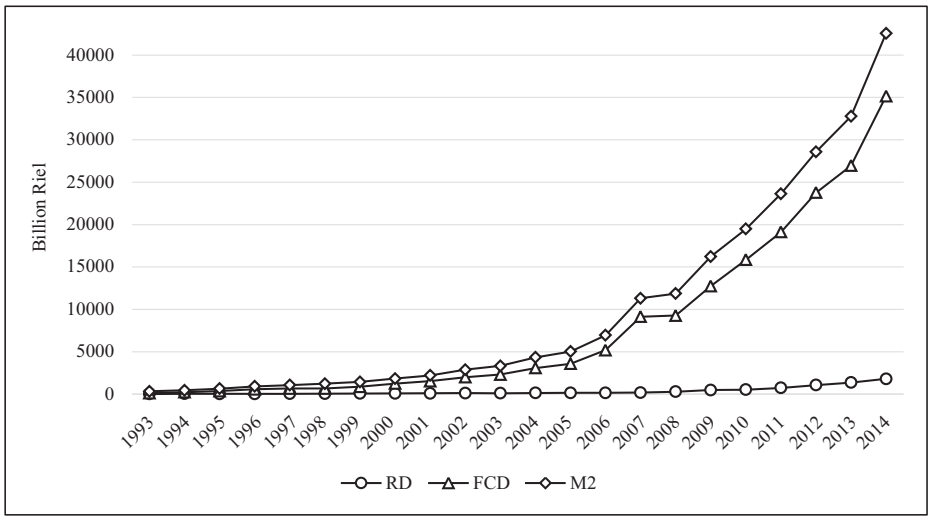
1 "Seignorage is the difference between the cost of producing and distributing money, and the eventual income withdrawn from lending this money" (Tal and Dabadie 2007,12).

Figure 1: Riel and foreign currency deposits and money supply



Sources: Beresford et al. 2004; NBC 2005, 2010, 2013, 2014

Paris Peace Agreement, which paved the way for political liberalisation. The arrival in 1992 of the United Nations Transitional Authority in Cambodia (UNTAC), set up to oversee the first national election after the civil war, was critical since it marked the first massive inflows of foreign capital, largely in the form of US dollars. It was also one of the most costly UN peace operations, amounting to some USD1.7 billion (Tal and Dabadie 2007).

Current state of affairs and efforts to de-dollarise

Composition of Cambodia's reserves

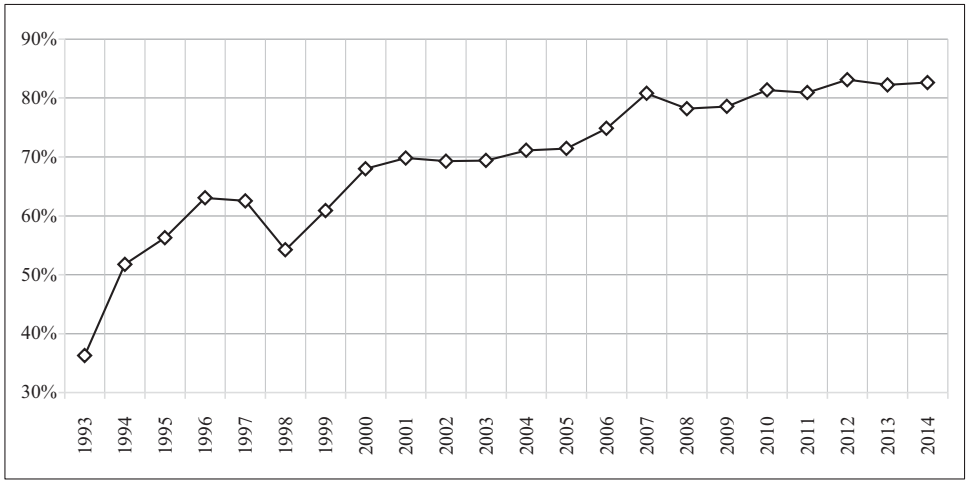
This section describes NBC data on money supply (M2) for the period 1993 to 2014. Foreign currency deposits (FCD) have dominated, increasing from 84 percent of total deposits in 1993 to 95 percent in 2014, while riel deposits (RD) decreased from 16 percent to 5 percent. As the economy has grown, both FCD and RD values have increased. Between 1993 and 2014, FCD rose from KHR121 billion to KHR35,161 billion, and RD increased from KHR23 billion to KHR1805 billion (Figure 1). FCD have increased at a greater rate than RD because the demand for the riel is lower than for foreign currencies (Beresford et al. 2004). At the same time, the dollarisation index expanded from 36 percent to 83 percent (Figure 2); this calculation does not include foreign currency circulation, which is unknown.

Reasons for persistent dollarisation

More and more people hold US dollar deposits, and 90 percent of bank transactions are done in dollars (Beresford et al. 2004). There are two main reasons for this persistence—the US dollar is a convenient currency for transactions, and the demand and supply of dollars. The perception that the dollar is already widely used in the economy makes it the preferred choice for transactions. Prices are mostly quoted in dollars, and goods and services paid for in dollars, private sector wages are mostly paid in dollars, and the minimum wage is denominated in dollars. Further, there are no restrictions on the use of the dollar.

Cambodia's GDP (current USD prices) almost tripled between 2003 and 2013, with annual GDP growth of around 7 percent from 2011 to 2014 (World Bank 2016, 2015). Five main economic indicators give evidence for increases in US dollar inflows. International tourism receipts, which in 2014 contributed 29.9 percent of GDP (WTTC 2015), increased 5.56 times between 2003 and 2013. In the same period, net foreign direct investment grew 16.02 times, net official development assistance rose 1.55 times,

Figure 2: Share of foreign currency deposits in money supply



Sources: NBC 2005, 2010, 2013, 2014

and net current transfers were 1.77 times greater. Furthermore, as the net trade deficit widened due to rising imports, the demand for US dollars increased. These five indicators are usually calculated in US dollars rather than riels. In addition, between 2011 and 2014, deposits increased 7.88 times and loans increased 3.17 times (NBC 2014), indicating financial deepening and heightened economic activity.

Overall, the US dollar offers better economic prospects and is therefore in greater demand than the riel. This severely limits monetary policy options. Because only a small proportion of the money in circulation is riels, the NBC cannot intervene in the market by using M2 to soften the impact of financial problems. Thus, to achieve sustainable economic development, particularly to gain monetary power, promoting local currency is a must.

Analysis of policy implementation

There have been no forceful policies to promote the riel, nor have related efforts by the NBC been done within a targeted timeframe (McGrath 2015). On the demand side, it is compulsory to pay utility bills, tax and public sector salaries in riels (Tal and Dabadie 2007). A recent survey reveals that salary payments constitute the biggest source of foreign currency in Cambodia (Khou and Odajima 2015).

On the supply side, the NBC has maintained economic stability, particularly price and exchange rate stability. Inflation has been kept in check, standing at 4 percent in 2013 (NBC 2013). Furthermore, the NBC has been injecting new notes into the economy to replace old, worn-out ones. This may restore people's pride in the riel. The Securities and Exchange Commission of Cambodia was established under the Law on the Issuance and Trading of Non-Government Securities in 2007. This is yet another way of increasing riel usage, as prices in both primary and secondary markets are quoted in riels. However, the Cambodia Securities Exchange is not yet mature, nor has the government issued any bonds. Another achievement is that the NBC has developed a fully functioning interbank market to help manage liquidity risk. Also, the government will soon come out with new policies to promote the riel and de-dollarisation, for instance through leveraging financial markets.

Dollarisation in Bolivia, Ecuador and Peru

Why were these three countries selected for study?

Like Cambodia, Bolivia, Ecuador and Peru have experienced high levels of dollarisation. Average FCD to total deposits for the period 1995-2004 range from 94 percent in Cambodia and 90 percent in Bolivia to 76 percent in Ecuador and 68 percent in Peru (Alvarez-Plata and García-Herrero 2007). Bolivia, Ecuador and Peru have followed different strategies in response to dollarisation. Ecuador remains an officially dollarised economy, whereas Bolivia and Peru opted for de-dollarisation. First, Bolivia and Peru implemented a compulsory policy, but that only made the situation worse and caused more dollarisation. Their second tactic—market development—has been more successful.

Experiences of dollarisation—before and after

Ecuador, as part of structural reform to manage serious political and economic instability, adopted the US dollar as its legal tender in 2000. After it became an officially dollarised economy, the inflation rate fell dramatically, from a peak of 96.09 percent in 2000 to 37.68 percent in 2001 and 3.57 percent in 2014 (World Bank 2016). In the late 1990s the country experienced declining growth rates, dipping to -4.74 percent in 1999. This trend gradually reversed from 2000 onwards, with GDP growth standing at 3.80 percent in 2014. In addition, trade, which had remained fairly stagnant before official dollarisation, increased its share in GDP.

Similarly to Ecuador's experience, dollarisation in Bolivia came about in response to the hyperinflation and economic instability of the 1970s. However, a balance of payments crisis and inflation rate of 32.13 percent in 1981 led in 1982 to a compulsory de-dollarisation policy. Five consecutive years of negative GDP growth and hyperinflation followed. Average annual inflation rates shot up to 123.54 percent in 1982, a staggering 11,749.64 percent in 1985 and then 273.35 percent in 1986, before falling to more manageable levels of 14 to 21percent in 1987-92 (World Bank 2016). Since then, a market development policy introduced in 2006 has had positive results. Bolivian boliviano deposits to total deposits rose to 78 percent in 2014 from 23 percent in 2006, while local credit to total credit grew to 92 percent from 15 percent (Catacora 2014).

Pursuit of three criteria—macroeconomic stabilisation, prudential policy and debt sustainability—appeared to be successful in stabilising Bolivia's economy after de-dollarisation (Staines 2014). An outward-looking policy during the 1990s brought lower inflation, steady GDP growth and increased trade. Incentive policies had an important role in promoting the boliviano, mainly through discriminatory legal reserve ratios, credit risk provisioning, foreign exchange net exposure limits and foreign financial transaction tax (Staines 2014). For instance, the Bolivian Central Bank increased its reserve requirement rate from 7.5 percent to 30 percent, and set higher exchange rates (minimum and maximum buy and sell prices) for foreign currency than for the boliviano. Foreign currency transactions exceeding USD2000 were taxed (MEPF 2013). In addition, unlike in Cambodia, the minimum wage is denominated in the local currency. Government debt as a proportion of GDP decreased from 80.4 percent in 2005 to 32.4 percent in 2014, ranking Bolivia fifth (out of 10) in Trading Economics[2] (2016) country list. These market conditions favoured government bond issues, particularly in the boliviano, which in turn helped reduce credit dollarisation (García-Escribano and Sosa 2011).

Peru also experienced hyperinflation and consequent growing dollarisation in the mid-1970s, culminating in the government forcing people to convert their foreign currency holdings to the local currency. Contrary to what was intended, dollarisation continued to increase, with dollar deposits rising to about 80 percent of total deposits in 1990 from just above 60 percent in the 1980s (Staines 2014). A market development policy has played a critical role in facilitating Peru's de-dollarisation. Initially it helped curb the rise in inflation, which more than halved from 163.40 percent in 1985 to 77.92 percent in 1986, although in subsequent years it shot up, reaching a peak of 7481.66 percent in 1990 (World Bank 2016). Further policy implemented in the early 2000s reduced dollar deposits to 52 percent and credit dollarisation to 55 percent in 2009 from almost 80 percent for each in 2001.

Peru's macroeconomic outlook during the 2000s was good due to lower inflation and positive GDP growth. Government debt as a share of GDP was reduced, ranking Peru fourth in Trading Economies (2016) country list, and local currency bonds were issued. Regarding prudential policy, discriminatory legal reserve ratios, credit risk provisioning requirements and foreign exchange net exposure limits were adopted. There is a big gap between the reserve requirement ratios for the Peruvian sol (less than 5 percent) and foreign currency (more than 30 percent) (García-Escribano 2010), and credit provision for foreign currency (20 percent) is set higher than for the sol (8 percent). The Peruvian Central Bank maintains exchange rate stability by accumulating international reserves (Rossini, Quispe and Serrano 2013). As in Bolivia, the minimum wage is denominated in the local currency.

Similarities, differences and policies

In Bolivia, Cambodia, Ecuador and Peru, dollarisation was a response to political and economic instability, particularly hyperinflation. Cambodia's case is unique in that its domestic currency had been practically abolished relatively shortly before its economy was swamped with a colossal and sudden influx of US dollars, equivalent to two-thirds of GDP in 1993 (Khou and Ken 2015).

Lessons from Ecuador imply that it is not desirable for Cambodia to continue under official dollarisation given that the country's macroeconomic outlook is stable with positive trends. However, drawing on what Bolivia and Peru have gone through, Cambodia is strongly recommended to avoid compulsory de-dollarisation because it might only entrench official dollarisation. Instead, market development could be the optimal policy to promote the riel (Tal and Dabadie 2007; Duma 2011). Cross-country comparison of the preconditions for de-dollarisation reveals significant inconsistencies between Cambodia's policies to promote the riel and attract capital inflows in that the bid to attract tourists and foreign investors is a powerful incentive to use US dollars.

2 Based on the debt credit ratings reported by five major credit rating services, namely Moody's, Standard & Poor's, Fitch, Economic Indicators, and Financial Markets, Trading Economics (2016) 10-tier ranking is as follows: 1st rank is prime; 2nd: high grade; 3rd: upper medium grade; 4th: lower medium grade; 5th: non-investment grade speculative; 6th: highly speculative; 7th: substantial risks; 8th: extremely speculative; 9th: in default with little prospect for recovery; and 10th rank is in default.

Ecuador's macroeconomic conditions are not very different from those of Peru and Bolivia, yet it is ranked sixth (Trading Economies 2016) because it cannot issue its local currency. One of the factors that has contributed to decreasing the dollarisation of Bolivia's and Peru's economies is the issuance of local currency bonds. Therefore, being in sixth rank, Cambodia is well placed to issue government bonds in riels. Doing so would promote riel usage and increase domestic debt rather than foreign debt.

Among the various prudential policies adopted by the comparator countries, three stand out as being particularly fruitful approaches to rein in dollarisation: reserve requirement ratios, provision, and foreign exchange intervention. Bolivia and Peru both set large local-foreign currency deposit rate gaps, but Cambodia's is very small—8 percent for the riel and 12.5 percent for foreign currency (NBC2016). The comparator countries have adopted discriminatory currency practices to treat local currency more beneficially than foreign currency. Cambodia, however, treats the riel and the dollar more or less equally. On the one hand, riel usage is promoted and riel deposits attract higher interest rates; on the other, slightly higher interest rates are charged for riel loans (NBC 2013). Bolivia levies a tax on foreign currency transactions and limits the size of its local currency loan portfolio. Cambodia has not yet followed suit.

Conclusion

High and persistent dollarisation in Cambodia is largely the result of inconsistencies in polices designed to promote the riel and attract capital inflows. It would be difficult for Cambodia to replicate lessons learned from Bolivian and Peruvian experiences because the NBC has limited policy tools at its disposal, and existing policy does not provide adequate incentives to stimulate greater riel usage. In addition, Cambodia's domestic capital market is relatively immature. If Cambodia is to maintain a positive political and macroeconomic outlook, it will have to improve its capital market. This can be achieved through the issuance of sovereign bonds. Importantly, to create incentives that make it desirable to use riels, macroprudential policies should be cumulative and marketable and policy inconsistencies should be minimised.

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Economy Watch—External Environment

This section describes economic indicators of major world economies and economies in Southeast Asia.

In the fourth quarter of 2015, real GDP growth in Indonesia increased 5.0 percent. Growth in Malaysia was 4.5 percent. Singapore's economy expanded 1.8 percent compared to 2.1 percent in the same quarter a year earlier. The annual growth rate in Thailand was 2.8 percent, lower than the previous quarter by 0.1 percentage points. Year on year growth in Vietnam expanded to 7.0 percent due to increased industrial output and high foreign investment.

The real growth in China rose to 6.8 percent and Hong Kong to 1.9 percent in the fourth quarter. Growth in South Korea reached 3.0 percent, and growth in Taiwan declined to -0.5 percent. Taiwan experienced its lowest growth in this quarter since the global financial crisis.

In the fourth quarter, growth in the EU was 1.5 percent year on year. Japan's real growth decreased to 0.5 percent. Low personal consumption in Japan contributed to this low growth. Real GDP growth in the US dropped to 1.8 percent, from 2.4 percent a year earlier. The strong US dollar raised the cost of US exports.

World inflation and exchange rates

Inflation rates in several Asian countries increased, while some ASEAN countries still faced deflation in the fourth quarter of 2015.

Inflation in Cambodia was 2.0 percent year on year. The increase in gasoline price in Indonesia has driven up inflation since 2013. In the fourth quarter, inflation in Indonesia was lower than the previous quarter by 2.3 percentage points; however, it is still high among ASEAN countries. Malaysia's inflation was 2.6 percent, which is lower than the previous quarter by 0.4 percentage points. Singapore still experienced deflation of 0.7 percent. Thailand's deflation was 0.9 percent, and it has faced deflation for four consecutive quarters. Vietnam's inflation was 0.3 percent, and has been markedly lower in 2015 than in 2014.

In China, there was a small decrease in the inflation rate to 1.5 percent. Inflation in Hong Kong expanded to 2.4 percent, and in South Korea to 1.1 percent. Inflation in Taiwan was 0.3 percent, while the rate was zero in the previous quarter. Inflation in the euro area rose to 0.3 percent, and in Japan to 0.7 percent. US inflation grew to 0.4 percent.

In the fourth quarter, the riel appreciated 1.0 percent from the previous quarter against the dollar, to KHR4051, while the Thai baht depreciated 1.7 percent and the Vietnamese dong 1.2 percent. The Chinese yuan depreciated 1.6 percent against the dollar from a quarter earlier, while the Japanese yen appreciated 0.7 percent.

Commodity prices in world markets

In the fourth quarter, prices of major commodities in world markets dropped from a year earlier. Maize shrank 3.7 percent to USD167.1/tonne, palm oil 27.6 percent to USD518.0/tonne and rubber 20.1 percent to USD1229.1/tonne. Prices of rice decreased 12.5 percent to USD376.3/tonne and of soybeans 18.6 percent to USD358.0/tonne. The price of crude oil contracted 48.3 percent to USD38.0/barrel, contributing to decreased prices of gasoline and diesel of 31.9 and 40.9 percent, respectively.

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Table 1: Real GDP growth of selected trading partners, 2010–15 (percentage increase over previous year)

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Selected ASEAN countries												
Cambodia	6.0	7.1	7.3	7.4	-	-	-	-	-	-	-	-
Indonesia	6.2	6.5	6.3	5.8	5.2	5.1	5.0	5.4	4.7	4.7	4.7	5.0
Malaysia	9.0	4.9	5.4	4.6	6.2	6.4	5.6	5.8	5.6	4.9	4.7	4.5
Singapore	14.7	4.7	1.3	3.8	5.1	2.4	2.4	2.1	2.6	1.8	1.9	1.8
Thailand	7.9	0.0	6.7	2.8	3.1	0.3	0.6	2.2	3.3	2.2	2.9	2.8
Vietnam	6.4	6.2	5.2	5.4	4.8	5.5	6.4	6.8	6.1	6.5	6.8	7.0
Selected other Asian countries												
China	10.4	9.3	7.7	7.7	7.1	7.5	7.3	7.3	7.1	7.0	6.9	6.8
Hong Kong	6.9	4.9	2.9	3.0	2.5	1.8	2.7	2.2	2.1	2.8	2.3	1.9
South Korea	6.1	3.6	2.1	2.8	4.1	3.5	3.2	2.8	2.4	2.2	2.7	3.0
Taiwan	11.1	4.2	1.2	2.2	3.1	3.7	3.8	3.3	3.4	0.5	-1.0	-0.5
Selected industrial countries												
Euro-12	1.6	1.6	-0.5	0.1	0.9	0.7	0.3	0.9	1.0	1.2	1.6	1.5
Japan	4.1	-0.8	1.7	1.7	3.1	-0.1	-1.2	0.5	-0.9	0.7	1.0	0.5
United States	2.7	1.8	2.1	1.8	2.3	2.6	2.3	2.4	2.7	2.3	2.2	1.8

Sources: International Monetary Fund, *Economist* and countries' statistics offices

Table 2: Inflation rate of selected trading partners, 2010–15
(percentage price increase over previous year—period averages)

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Selected ASEAN countries												
Cambodia	4.1	5.5	3.0	3.0	4.5	4.9	4.0	2.2	1.0	1.0	0.8	2.0
Indonesia	5.1	5.4	4.3	7.0	7.7	7.1	4.3	6.5	6.6	7.1	7.1	4.8
Malaysia	1.7	3.2	1.7	2.1	3.5	3.3	3.0	2.8	0.7	2.1	3.0	2.6
Singapore	2.9	5.2	4.6	2.3	1.0	2.3	0.9	-0.1	-0.3	-0.4	-0.6	-0.7
Thailand	3.1	3.8	3.0	2.2	2.0	2.5	2.0	1.1	-0.5	-1.1	-1.1	-0.9
Vietnam	9.0	18.6	9.3	6.6	4.8	4.7	4.5	5.4	0.7	1.0	0.5	0.3
Selected other Asian countries												
China	3.2	5.4	2.7	2.6	2.1	2.2	2.0	1.5	1.2	1.4	1.7	1.5
Hong Kong	2.4	5.3	4.1	4.0	4.1	3.6	4.9	5.0	4.4	3.1	2.3	2.4
South Korea	3.0	4.4	2.1	1.1	1.1	1.6	1.4	1.0	0.6	0.5	0.6	1.1
Taiwan	1.0	1.4	1.9	0.8	1.1	1.6	1.5	1.6	2.9	-0.7	0.0	0.3
Selected industrial countries												
Euro-12	1.6	2.7	2.5	1.4	0.6	0.6	0.4	0.2	-0.3	0.2	0.0	0.3
Japan	-0.7	0.1	-0.03	0.4	1.5	3.6	3.4	2.6	2.3	0.5	0.2	0.7
United States	1.7	3.2	2.1	1.5	1.4	2.1	1.8	1.3	-0.4	0.0	0.1	0.4

Sources: International Monetary Fund, *Economist* and National Institute of Statistics

Table 3: Exchange rates against US dollar of selected trading partners, 2010–15 (period averages)

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Selected ASEAN countries												
Cambodia (riel)	4187.1	4063.6	4037.8	5369.6	3993.8	4026.9	4059.5	4070.1	4042.2	4056.7	4091.8	4050.9
Indonesia (rupiah)	9089.9	4374.0	9363.0	13892.2	11765.8	11615.3	11775.7	12244.1	12809.9	13125.2	13858.0	13786.3
Malaysia (ringgit)	3.2	1.5	3.1	4.2	3.3	3.2	3.2	3.4	3.6	3.7	4.1	4.3
Singapore (S$)	1.4	1.3	1.2	1.7	1.3	1.3	1.3	1.3	1.4	1.3	1.4	1.4
Thailand (baht)	31.7	30.5	31.1	41.0	32.6	32.4	32.1	32.7	32.6	33.2	35.2	35.8
Vietnam (dong)	19200.8	20574.3	20856.9	27987.1	21093.8	20923.2	21221.9	21314.0	21372.9	21712.7	22164.6	22420.7
Selected other Asian countries												
China (yuan)	6.8	6.5	6.3	8.2	6.1	6.2	6.2	6.1	6.2	6.2	6.3	6.4
Hong Kong (HK$)	7.8	7.8	7.8	10.3	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
South Korea (won)	1156.3	1108.6	1126.6	1460.0	1069.7	1028.9	1027.5	1088.4	1101.7	1097.4	1170.0	1158.3
Taiwan (NT$)	31.3	29.4	29.6	39.6	30.3	30.1	30.0	30.9	31.6	30.8	32.0	32.6
Selected industrial countries												
Euro-12 (euro)	0.8	0.7	0.8	1.0	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9
Japan (yen)	87.8	79.9	79.8	130.2	102.8	102.1	104.0	114.6	119.2	121.4	122.2	121.4

Sources: International Monetary Fund, *Economist* and National Bank of Cambodia

Table 4: Selected commodity prices on world market, 2010–15 (period averages)

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Maize (USNo.2)—USA (USD/tonne)	185.9	291.7	298.4	259.4	209.9	214.0	174.1	173.5	174.2	168.4	169.5	167.1
Palm oil—north-west Europe (USD/tonne)	900.8	1125.4	999.3	856.9	911.3	887.1	772.0	715.3	627.9	664.0	514.6	518.0
Rubber SMR 5	3405.7	4630.6	3200.7	2575.3	2034.7	1777.6	1672.1	1538.1	1450.2	1525.9	1365.5	1229.1
Rice (Thai 100% B)—Bangkok (USD/tonne)	506.6	558.5	594.8	533.8	450.7	411.7	447.0	430.3	426.0	396.3	383.3	376.3
Soybeans (US No.1)—USA (USD/tonne)	449.8	540.7	591.4	538.4	552.3	517.8	457.3	439.7	363.9	393.7	347.6	358.0
Crude oil—OPEC spot (USD/barrel)	76.8	106.2	109.5	105.9	104.7	105.9	100.8	73.4	50.9	60.5	48.2	38.0
Gasoline—US Gulf Coast (cents/litre)	53.3	71.9	74.6	71.2	70.1	74.1	70.0	48.3	40.1	49.0	42.2	32.9
Diesel(low sulphur No.2)—US Gulf Coast (cents/litre)	56.1	75.7	80.7	78.4	77.5	77.1	73.7	57.5	44.6	48.4	39.9	34.0

Sources: Food and Agriculture Organisation and US Energy Information Administration

Economy Watch—Domestic Performance

Main economic activities

In the fourth quarter of 2015, approvals of fixed asset investments rose 83.1 percent from the previous quarter and 241.4 percent year on year, to USD254.6 m. Agricultural investment decreased 66.1 percent from the previous quarter to USD26.8 m. Industrial investment expanded 214.3 percent to USD410.4 m; however, garment investments shrank 13.3 percent compared to the preceding quarter. Services investment rose 6.9 percent from the previous quarter to USD74.5 m; the contribution from hotels and tourism was USD38.0 m.

During the same quarter, total foreign arrivals increased 36.7 percent compared to the previous quarter, while decreasing 9.6 percent from the same quarter a year earlier. Arrivals by air rose 20.9 percent and by land and water 55.3 percent from the previous quarter.

Total exports dropped 11.0 percent from the previous quarter, but increased 8.1 percent from a year earlier. Garment exports contracted 15.7 percent from a quarter earlier, to USD1681.2 m. Exports to the EU and US declined 10.4 and 25.0 percent from the previous quarter but to ASEAN increased 4.3 percent. Export of agricultural products rose 43.4 percent, of wood 110.0 percent, of fish 50.0 percent and of rice 80.5 percent compared to the previous quarter. The decrease of exports of rubber was 3.4 percent, and of other agriculture products 32.4 percent from a quarter earlier.

In the fourth quarter, imports increased 1.4 percent from a quarter earlier, and 5.0 percent from the previous year to USD2949.1 m. Imports of diesel fuel rose 7.5 percent to USD150 m but of gasoline dropped 32.6 percent to USD65.1 m and of construction materials 8.3 percent to USD42.1m, from the previous quarter.

Public finance

Total government revenue in the third quarter contracted 7.2 percent from a quarter earlier to KHR3063.8 bn, of which current revenue declined 7.5 percent to KHR3028.7 bn. Tax revenue, which accounted for 86.7 percent of the total, dropped 11.6 percent to KHR2656.2 bn. Non-tax revenue increased 38.8 percent to KHR372.5 bn. In the same quarter, total expenditure grew 69.9 percent from a quarter earlier, to KHR3337.5 bn, due to an increase of 11.1 percent (KHR649.9 bn) in capital expenditure and of 94.8 percent (KHR2687.7 bn) in current expenditure.

Inflation and foreign exchange rates

Inflation in the fourth quarter of 2015 was 2.0 percent. Prices of food and non-alcoholic beverages increased 4.7 percent but of transportation dropped 8.9 percent. The riel appreciated 1.0 percent against the dollar, 2.7 percent against the Thai baht and 2.2 percent against the Vietnamese dong from the previous quarter. The price of gold dropped 3.8 percent from the previous quarter, and diesel fuel declined 11.7 percent and gasoline 11.5 percent.

Poverty situation

Compared with February last year, real daily earnings of vegetable traders, scavengers, skilled construction workers, motor taxi drivers and rice field workers rose, while those of four other vulnerable groups dropped.

In February, 94 percent of all respondents were the main income source for their families. On average, they worked 9.5 hours/day. Fifty-six percent of them had only one occupation, while the other 44 percent had two occupations.

In February 2016, garment workers' daily wages increased by 2.0 percent from the same month last year, to KHR14,937. Among the sample, the average educational level was lower primary. Sixty-four percent of them received on-the-job training, and only 10 percent attended private training. Workers worked on average 6 days or 54 hours per week. Around 47 percent of them sometimes worked overtime, while 28 percent frequently worked overtime. The total spending of garment workers was 43 percent of their income. Food spending was 67 percent, and housing rental 19 percent of total spending. Seventy-seven percent could not save for their future and if their factory were to close, they would look for another job in Phnom Penh (55 percent of respondents), while the other 45 percent would go back to their hometown.

In February, earnings of vegetable vendors rose 36 percent compared with the same month last year, to KHR20,403/day. Many of them were living in

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Kandal (30 percent) or Svay Rieng (28 percent), while only 8 percent were living in Phnom Penh. Ninety-five percent of them were breadwinners in their family. They rented lodgings with an average of three other people. Thirty-eight percent of their earnings were spent on food, rent, health care and transport.

Scavengers' earnings increased by 5.4 percent from the preceding year to KHR11,196/day. They were originally from Prey Veng (49 percent), Takeo (15 percent), Kompong Cham, Kompong Speu, Kompong Thom, Kampot, Kandal, Phnom Penh and Svay Rieng. Almost all of them were the main income earner in their family. Eighty percent of the interviewees moved to Phnom Penh with their families. The scavengers spent on average 34 percent of their total earnings, especially on food.

Unskilled construction workers' daily earnings went down by 2.8 percent to KHR16,217. The majority of workers were from Svay Rieng and Prey Veng provinces and they were the breadwinners. They spent 84 percent of total daily expenses on food.

Porters' daily earnings declined 11.1 percent from the same month last year to KHR14,937. All the respondents were the main income earners in their family. Seventy-eight percent of them migrated to Phnom Penh alone and shared lodging with an average of five people. Their spending was mostly on food, which took 38 percent of their earnings. The majority of them supported their families and cannot save for their futures.

Daily earnings of waiters/waitresses were down by 6.9 percent from a year earlier to KHR7886. All respondents stayed at the shop house. They spent 27 percent of their daily earnings on food, and 3.7 percent on health care. None could save because all their remaining money was sent to their families.

Economy Watch—Economic Indicators

Table 1: Private investment projects approved, 2010–2015*

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Fixed Assets (USD m)											
Agriculture	530.7	725	531.6	930.5	28.9	27.6	0.0	0.0	25.8	38.08	79.1	26.8
Industry	403.7	2860.1	829.3	3257	179.0	239.3	434.3	149.9	342.8	130.91	130.6	410.4
. Garments	122.8	393.9	497	324.1	109.3	172.4	81.6	30.3	63.9	42.4	63.7	55.2
Services	1337.3	3425.4	916.6	140.7	219.1	114.4	191.5	0.0	2504.6	85.64	69.7	74.5
. Hotels and tourism	1105.1	2850.9	691.5	106	163.3	15.4	268.1	0.0	60.6	0.0	0	38.0
Total	2271.7	7010.42	2278.0	4328	426.9	302.2	625.8	149.9	2873.2	254.6	279.4	511.7
	Percentage change from previous quarter											
Total	-	-	-	-	-75.8	-29.2	64.1	-76.0	1816.8	-91.1	9.7	83.1
	Percentage change from previous year											
Total	-61.3	209	-67.5	90.1	95.1	-81.8	142.7	-91.5	573.0	-33.2	-55.3	241.4

*Including expansion project approvals. Source: Cambodian Investment Board

Table 2: Value of construction project approvals in Phnom Penh, 2009–15

	2009	2010	2011	2012	2013	2014				2015		
						Q1	Q2	Q3	Q4	Q1	Q2	Q3
	USD m											
Villas, houses and flats	213.9	220.1	405.1	547.3	658.9	133.6	84.0	33.1	20.4	122.3	-	-
Other	187.8	217.8	199.9	463.6	859.6	190.0	141.7	105.6	11.7	49.8	-	-
Total	441.2	489.8	605.0	1010.9	1518.5	323.6	225.7	138.7	32.1	172.0	-	-
	Percentage change from previous quarter											
Total	-	-	-	-	-	34.3	-30.2	-38.5	-77.8	437.3	-	-
	Percentage change from previous year											
Total	-60.5	11.0	23.5	67.1	28.1	8.0	-9.2	-64.2	-86.7	-46.8	-	-

Source: Department of Cadastre and Geography of Phnom Penh municipality

Table 3: Foreign visitor arrivals, 2010–2015

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Thousands											
By air	1304.3	1480.4	1722.1	2017.7	699.0	438.2	497.5	638.8	725.1	497.4	563.8	681.3
By land or water	1094.6	1401.4	1862.2	2192.5	569.0	495.2	501.2	663.9	647.6	496.7	481.1	747.0
Total	2398.9	2881.8	3584.3	4210.2	1268.0	933.4	998.7	1302.7	1372.6	994.2	1044.9	1428.4
	Percentage change from previous quarter											
Total	-	-	-		10.0	-26.4	7.0	30.4	5.4	-27.6	5.1	36.7
	Percentage change from previous year											
Total	13.6	20.1	24.4	17.5	8.0	1.4	3.5	13.0	8.3	6.5	4.6	9.6

Source: Ministry of Tourism

Table 4: Exports and imports, 2010–2015*

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	USD m											
Total exports	3630.2	4929.5	6106.4	6982.4	1976.5	1859.8	2132.5	2137.1	2170.1	2182	2595	2309.3
Of which: Garments	3223.4	4259.6	5015.4	5386.1	1464.0	1379.2	1624.7	1492.6	1548.8	1601.7	1995.3	1681.2
. To US	1853.9	2055.3	2143.3	2075.2	531.1	452.5	511.2	468.8	491.08	494.3	585.3	438.8
. To EU	809.5	1322.2	1716.9	1969.6	532.7	558.5	673.8	638.7	617.3	685.9	844.1	756.6
. To ASEAN	9.9	17.6	39.4	60.2	21.9	19.3	20.5	21.7	24.8	24.6	26.4	27.5
. To Japan	86.5	147.0	188.6	278.7	101.4	74.9	117.6	89.2	121.4	93.6	170.8	138.4
. To rest of the world	463.6	717.5	927.2	1002.9	277.0	273.9	301.6	274.2	294.2	303.4	368.8	319.9
Agriculture	164.9	362.1	376.7	554.5	167.0	157.3	133.7	166.4	150.3	127.3	111.4	159.7
. Rubber	89.1	197.6	176.6	175.2	31.7	40.0	34.8	47.5	41.7	40.9	42.1	40.7
. Wood	34.1	48.8	36.8	73.6	55.9	48.4	19.6	8.2	13.9	9.8	7.3	15.3
. Fish	2.8	3.1	2.0	1.2	0.3	0.2	0.1	0.2	0.2	0.2	0.08	0.1
. Rice	34.7	106.6	146.4	262.3	57.9	52.8	55.8	82.0	89.5	72.4	54.7	98.8
Other agriculture	4.1	6.0	14.9	42.4	21.2	16.0	23.5	28.5	5.2	4.0	7.2	4.9
Others	242.0	307.9	714.4	1088.2	345.5	323.3	373.0	478.2	471.0	452.9	488.0	468.4
Total imports	5190.6	6375.9	8593.3	8639.4	2238.2	2454.4	2794.8	2807.9	2717.3	2920.3	2907.9	2949.07
Of which: Gasoline	108.6	294.4	308.0	306.4	77.4	83.2	80.2	93.9	34.5	92.2	96.5	65.1
Diesel fuel	203.8	447	559.5	569.1	148.5	142.5	163.4	147.9	45.1	152.7	139.6	150.0
Construction materials	57.6	48.1	66.1	80.8	27.8	29.2	29.0	31.6	12.4	42.0	45.9	42.1
Other	4820.6	5586.4	7659.1	7682.6	1984.5	2199.5	2522.2	2534.0	835.2	2633.0	2626.0	2691.9
Trade balance	-1560.5	-1446.4	-1341.6	-1610.9	-261.7	-589.5	-662.3	-670.8	-547.2	-738.3	-312.9	-639.7
	Percentage change from previous quarter											
Total garment exports	-	-	-	-	9.8	-5.8	17.8	-8.1	3.8	3.4	24.6	-15.7
Total exports	-	-	-	-	8.9	-5.9	14.7	0.2	1.5	0.5	18.9	-11.0
Total imports	-	-	-	-	5.1	9.4	14.1	0.5	-3.2	7.5	-0.4	1.4
	Percentage change from previous year											
Total garment exports	25.7	32.1	17.7	7.4	19.5	9.6	3.6	11.9	5.8	16.1	22.8	12.6
Total exports	25.1	35.8	23.9	14.3	25.3	14.8	8.3	17.7	9.8	17.3	21.7	8.1
Total imports	19.8	22.8	16.8	0.5	2.1	10.8	35.7	31.8	21.4	19.2	4.0	5.0

* Import data include tax-exempt imports. Sources: Department of Trade Preference Systems, MOC and Customs and Excise Department, MEF (web site)

Table 5: National budget operations on cash basis, 2009–2015 (billion riels)

	2009	2010	2011	2012	2013	2014				2015		
						Q1	Q2	Q3	Q4	Q1	Q2	Q3
Total revenue	4885.2	5989.0	6251.4	7691.9	8255.2	2220.5	2793.7	2580.6	2948.6	2647.8	3301.6	3063.8
Current revenue	4855.9	5859.1	6179.3	7443.8	8233.2	2219.2	2765.2	2571.4	2803.6	2638.0	3274.5	3028.7
Tax revenue	4268.0	4693.0	5277.5	6334.8	7198.1	1988.7	2383.1	2264.6	2358.8	2430.6	3006.1	2656.2
Domestic tax	3088.6	3533.6	4071.6	5002.8	5728.1	1593.6	1943.2	1798.0	1891.6	2012.6	2481.6	2153.9
Taxes on international trade	1064.7	1159.4	1205.9	1331.7	1470.0	449.0	439.9	466.5	467.2	418.0	524.5	502.3
Non-tax revenue	702.1	1166.1	901.8	1118.2	1035.2	176.6	382.1	306.9	444.8	207.4	268.5	372.5
Property income	64.6	291.1	63.8	143.0	84.0	11.1	40.8	21.2	15.4	3.0	16.7	35.9
Sale of goods and services	408.0	460.1	588.7	667.4	750.3	160.3	197.5	212.9	300.5	189.6	219.2	304.6
Other non-tax revenue	228.2	408.9	249.3	298.8	200.8	5.2	143.7	72.7	128.9	14.8	32.6	31.8
Capital revenue	29.3	129.9	72.1	247.9	73.4	1.3	28.5	9.2	145.0	9.8	27.1	35.0

Total expenditure	7383.5	8784.6	9032.4	9660.9	12535.7	2618.8	2867.2	3349.0	4471.4	2093.3	1964.8	3337.5
Capital expenditure	2694.9	2853.2	3546.9	3628.3	5567.5	1187.1	1395.9	1421.7	1586.0	654.4	584.7	649.9
Current expenditure	4440.0	4773.1	5341.2	6188.4	6968.3	1431.7	1471.4	1927.3	2885.4	1438.9	1380.1	2687.7
Wages	2012.0	2048.8	2170.6	2486.6	2997.3	860.0	931.0	918.4	1046.1	945.3	959.1	1281.2
Subsidies and social assistance	871.4	1099.4	1518.8	1586.8	1563.0	213.1	259.6	434.8	719.5	194.3	207.1	544.0
Other current expenditure	1556.6	1624.8	1651.8	2115.1	2408.0	358.6	280.8	574.1	1119.9	299.3	213.9	862.4
Overall balance	-2498.3	-2795.7	-1271.4	-1969.0	-4280.6	-398.4	-73.5	-768.5	-522.8	554.5	1336.8	-273.8
Foreign financing	1746.1	1845.2	-2781.0	2457.8	4326.2	977.9	1123.9	1,012.5	857.9	368.9	330.1	297.6
Domestic financing	474.9	938.6	2379.2	-332.9	824.4	-915.0	-172.9	-279.3	-61.4	-2464.8	-793.3	-259.1

Source: MEF website

Table 6: Consumer price index, exchange rates and gold prices (period averages), 2010–2015

	2010	2011	2012	2013	2014				2015			
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
(Based year: 2006)	Consumer price index (percentage change from previous year)											
Phnom Penh - All Items	4.1	5.4	2.3	3.9	4.6	4.8	4.0	2.1	1.0	1.0	0.8	2.0
- Food & non-alcoholic bev.	4.4	6.5	2.5	4.9	5.7	5.3	5.1	3.4	4.2	3.9	3.3	4.7
- Transportation	7.0	6.9	3.3	-1.0	-1.1	0.5	-0.2	-3.3	-10.9	-7.9	-9.1	-8.9
	Exchange rates, gold and oil prices (Phnom Penh market rates)											
Riels per US dollar	4187.1	4063.6	4039.2	4036.2	3993.8	4026.9	4059.5	4064.7	4042.2	4056.7	4091.8	4050.9
Riels per Thai baht	133.1	133.2	130.0	124.9	123.0	124.8	127.1	124.6	124.4	122.6	116.8	113.6
Riels per 100 Vietnamese dong	21.7	19.7	19.4	19.1	19.1	19.2	19.2	19.1	19.0	18.8	18.6	18.2
Gold (US dollars per chi)	147.5	184.5	200.9	152.3	156.6	155.9	155.5	141.1	150.9	144.4	136.0	130.9
Diesel (riels/litre)	3859.3	4761.2	4941.2	4852.1	4971.2	5006.7	5047.6	4382.8	3823.4	4032.0	3840.2	3389.4
Gasoline (riels/litre)	4368.1	5044.5	5312.7	5083.3	5171.5	5200.0	5348.6	4613.0	3986.2	4189.0	4048.9	3582.5

Sources: NIS, NBC and CDRI

Table 7: Monetary survey, 2009–15 (end of period)

	2009	2010	2011	2012	2013	2014				2015		
						Q1	Q2	Q3	Q4	Q1	Q2	Q3
	Billion riels											
Net foreign assets	14,655.0	16,697.9	17,893.9	18,154.5	21,260.1	23,344.4	26,235.8	26,817.8	26,699.7	26,823	27,975.3	26,359.2
Net domestic assets	1573.0	2778.9	5760.8	10,437.4	11,508.3	11,817.4	12,024.4	13,950.5	15,859.8	16,863.2	18,178.3	20,600.9
Net claims on government	-2252.0	-2126.6	-2123.1	-2486.4	-2794.9	-3349.3	-3747.3	-4113.0	-4359.1	-5064	-5666.1	-5933.1
Credit to private sector	10,532.0	13,331.2	17,552.8	23,536.6	27,608.8	28,584.5	30,621.3	33,226.4	36,244.6	37,759.4	40995	43,807.1
Total liquidity	16,228.0	19,476.8	23,654.7	28,591.9	32,768.4	35,161.8	38,259.9	40,768.3	42,559.5	43,685.2	46,153.7	46,960.1
Money	3120.0	3220.9	3956.2	4045.7	4878.2	5376.2	5231.3	5583.1	6308.4	6628.0	6293.1	6287.5
Quasi-money	13,108.0	16,255.9	19,698.5	24,546.2	27,890.2	29,785.7	33,028.5	35,185.2	36,251.1	37,058.2	39,860.6	40,672.6
	Percentage change from previous year											
Total liquidity	36.9	20.0	17.8	20.9	14.6	15.4	20.8	38.9	29.9	24.2	20.6	15.2
Money	30.1	3.2	16.9	2.3	20.6	19.5	14.1	18.3	29.3	23.3	20.3	12.6
Quasi-money	38.6	24.0	17.9	44.6	13.6	14.6	22.0	42.8	30.0	24.4	20.7	15.6

Source: National Bank of Cambodia

Table 8: Real average daily earnings of vulnerable workers (base November 2000)

	Daily earnings (riels)									Percentage change from previous year		
	2012	2013	2014				2015		2016	2014	2015**	2016
			May	Aug	Nov	Feb	May	Aug	Feb			Feb
Cyclo drivers	10,303	10,438	10,764	9867	11,634	12,950	12,467	11,799	11,919	3.2	15.1	-8.0
Porters	12,143	13,247	12,590	13,399	16,189	16,798	15,782	14,314	14,937	2.5	15.1	-11.1
Small vegetable sellers	10,771	11,366	13,581	15,373	17,735	15,007	18,171	14,423	20,403	29.8	7.6	36.0
Scavengers	8680	9819	9214	8337	9548	10,627	14,169	12,237	11,196	-6.6	34.6	5.4
Waitresses*	6111	6697	6696	7565	9435	8466	8742	8100	7,886	12.8	6.9	-6.9
Rice field workers	6151	6599	5836	8494	6781	8303	8063	9869	8,512	16.3	0.1	2.5
Garment workers	8932	10,161	11,412	11,607	12,092	14,644	14,803	15,515	14,937	-0.5	8	2.0
Motorcycle-taxi drivers	12,930	13,450	13,401	12,656	14,259	14,549	14,692	14,124	15,577	16.3	8.3	7.1
Unskilled construction workers	11,078	13,184	15,343	15,401	15,437	16,678	15,453	13,916	16,217	13.9	16.4	-2.8
Skilled construction workers	13,743	15,442	15,792	20,420	18,303	17,050	19,918	18,905	18,915	10.0	34.1	10.9

* Waitresses' earnings do not include meals and accommodation provided by shop owners. Surveys on the revenue of waitresses, rice-field workers, garment workers, motorcycle taxi drivers and construction workers began in February 2000. **Data in November 2015 is not available.

Source: CDRI

Continued from page 28 **CDRI UPDATE**

International Development Research Centre (IDRC) on the occasion of IDRC President Jean Lebel and Vice President Joanne Charette's visit to Phnom Penh. They briefed Mr Lebel and delegates about CDRI's overall activities, IDRC-supported programs and projects, and the positive outcomes of the Cambodia Development Research Forum (DRF). CDRI also organised an interview on CNC television for Mr Lebel to discuss various topics related to Cambodia's socioeconomic development and IDRC's role in promoting local social scientists to conduct research with a view to informing policy decisions.

7 March: The 10th Annual Outlook Conference, a partnership of CDRI and ANZ Royal, co-sponsored by Manulife, this year on the theme "Getting Things Moving – Regional and National Infrastructure and Logistics for Connectivity, Growth and Development", took place at Sofitel Phnom Penh Phokeethra. The keynote address was again presented by Prime Minister Hun Sen. The conference drew participation from distinguished guest speakers from high-level government institutions, development partners, private sector institutions and academia specialising in logistics and infrastructure development to provoke discussion on various subthemes: Challenges – What Needs to be Done? Major Players and Issues (Planning, Implementation and Regulatory Framework), Working Together to Make it Happen, and Major Success Factors.

8 March: At the CDRI full board meeting, chaired by the Board Chair HE Dr Sok Siphana, local and overseas board members discussed CDRI's current status, challenges, opportunities and ways forward.

16 March: The Executive Director was invited by the Singapore Embassy to give a lecture on "Cambodia's Economy and Development" to 20 officers from the Ministry of Foreign Affairs of Singapore.

18 March: The Executive Director participated in a dialogue forum on "Climate Change and Community Adaptation Plan", organised by CDRI in Siem Reap, and attended by HE Kim Chhai Heang, Deputy Governor of Siem Reap province. During the meeting the Executive Director had the opportunity to interact with various stakeholders and representatives from the Ministry of Water Resources and Meteorology, the Tonle Sap Authority, the Ministry of Environment and various development partners such as the Asian Development Bank (ADB).

21 March: HE Dr Sok Siphana, Chairman of CDRI Board of Directors, and the Executive Director were interviewed by Blue Media about the outcome of the 2016 Outlook Conference.

22 March: At an introductory meeting with senior managers and researchers, Ms Ruth Stewart, the new Deputy Head of Mission to Cambodia, Australian Embassy, exchanged ideas on how to engage in a mutually beneficial manner while implementing the DFAT-funded education research program.

RESEARCH

Agriculture

The team is implementing seven projects. Completed tasks include the second draft of the final report for the study on *Off-farm Income Generation Activities in Cambodia*, supported by the Food and Agriculture Organization (FAO), based on feedback and comment from FAO experts. Data analysis for the project "*Impact of Rice Export Promotion Policy and Food Security*" has been finalised and the literature review and report writing are now underway. For the project on the *Impact of Education Public Spending on Human Capital, Poverty and Inequality: A CGE Approach for Cambodia,* supported by Partnership for Economic Policy (PEP), a computable general equilibrium model was finalised during the team leader's study visit in Paris and the final report submitted. The zero draft report for *Irrigated Agriculture in Cambodia,* backed by the Australian National University, was submitted; the study team is preparing for the initial stakeholder workshop planned in May. Survey tools for *Testing Innovative Models of Extension in Cambodia's PADEE Programme,* funded by the International Food Policy Research Institute (IFPRI), have been finalised and training and fieldwork is planned to start in May.

The Lower Mekong Public Policy Initiative (LMPPI) has accepted a project proposal the team

submitted in the last quarter, and the contract should be finalised in April. In the pipeline is a project on *HARVEST Final Impact Evaluation* funded by the United States Agency for International Development (USAID). As requested by Michigan State University (MSU), the impact evaluation has been moved to August-September 2016, and the initial proposal has been resubmitted to MSU for contract review.

Economics

The studies on *Youth Outcomes and Determinants of Youth Vulnerabilities and Negative Outcomes* and on *Understanding the Life Choices of High School Dropouts,* both supported by the Organisation for Economic Co-operation and Development (OECD), were successfully completed. The team will share research findings with the Ministry of Education, Youth and Sport (MOEYS) at a briefing session to be organised in May. Also nearing completion are projects on *Mapping Sending Channels and the Management of Remittances in Cambodia,* and the *AEC Guidebook for Businesses in Cambodia.*

The revised report on *Interrelation between Partner Countries' Public Policies, Migration and Development: Case Studies and Policy Recommendations,* an OECD-funded study, was submitted to OECD for peer review. The team will organise the final dissemination workshop in June. Report writing for *Efficiency of Microfinance Institutions in Cambodia*, the remaining component of the Sida-supported five-year research project on *Inclusive Growth,* is in train. The interim report on *Revisiting the Unfinished Agenda: Determinants of Credit Access and Its Impact on Farm Production and Use of Fertiliser in Rural Cambodia* was submitted for review. Also making good progress is a project on *Vocational Training and Labour Market Transitions: A Randomised Experiment among Cambodian Young Adults.* This timely research receives funding under the Greater Mekong Subregion Research Network (GMS-Net) program, which is supported by an IDRC grant. The team is now selecting project participants to take part in the skills training to be provided by Pour un Sourire d'Enfant (PSE).

Education Unit Report

Senior Education researchers represented CDRI at the 10th Biennial Conference of the Comparative Education Society of Asia in Manila in January. Cambodia, represented by CDRI and local partners, won the bid to host the biennial regional conference in Siem Reap in May 2018. We are working with a local university and MOEYS to organise this high-profile education conference.

The Unit Head was invited by the Australian government to represent CDRI during their Special Visit Programme. Consequently, several partnerships have been developed with Australian counterparts including the Melbourne Centre for the Study of Higher Education, the LH Martine Institute for Higher Education Leadership and Management, and Australia's Department of Education and Training.

Two important proposals for research and capacity building were submitted in February and March. CDRI worked with the University of Malaya and a dozen other European and Asian academic partners to submit a proposal on "Facilitating ASEAN Cooperation and Enhancement" following a call for papers from the Erasmus+ programme on the theme "Capacity Building in the Field of Higher Education". The second proposal, on "Leadership in Sustainable Tourism Education for Economic Growth and Women's Empowerment", was submitted to the Department of Foreign Affairs and Trade, Australia. This project is a collaboration between CDRI, Griffith University, Royal University of Phnom Penh, MOEYS' Department of Higher Education, and the Ministry of Tourism.

Environment

The three-year project on *Climate Change and Water Governance in Cambodia*, funded by the International Development Research Centre (IDRC) of Canada, came to an end in March with the release of a booklet titled "Enhancing Adaptive Capacity to Climate Change Governance: Good Practices for Local People and Subnational Authorities in Cambodia". Four key events were organised in March as well. First, a Training of Trainers Workshop held in Siem Reap was participated in by farmer water user community leaders, commune councillors, district and provincial authorities from the three target provinces of Kompong Thom, Kompong Chnnang and Pursat. A Dialogue Meeting organised after the training day was attended by workshop participants plus representatives of development partners, government institutions and NGOs. That was followed by a dissemination

workshop in Phnom Penh on the theme "Facilitating Knowledge Sharing on Climate Change Assessment and Adaptation in the Tonle Sap Basin". Lastly, a Consultation Meeting with implementation partners was arranged in Kampot province, where the main task was to revise three research proposals for future submission. The series of events was rounded off with a visit to CDRI by the IDRC President Dr Jean Lebel to discuss CDRI's implementation of IDRC's projects in Cambodia.

Also completed was the end-project evaluation of *Promoting Climate Change Resilient Livelihoods for Small-scale Farmers in the Most Vulnerable Dryland Areas of Siem Reap and Kompong Cham Provinces*, commissioned by Plan International Cambodia. The final report was well received. The report for a Sida-funded project to examine how community-based natural resource management can be improved to maintain or enhance its contribution to climate change adaptation and food security is being finalised based on comments from peer-reviewers.

A research proposal on the topic "Gender in Environmental Impact Assessment in Cambodia" was successfully submitted to the Mekong Partnership for the Environment; the grant award is being finalised.

Governance

The team has been busy doing fieldwork and interacting with key subnational stakeholders for the studies on *Capacity for Deconcentration Reform in Cambodia* and *Participatory Action Research for Good Mekong Water Governance*. The unit also organised the first multi-stakeholder platform workshop on the theme "Water Governance in Cambodia", held in January at Phnom Penh Hotel. The workshop brought together 31 representatives from government institutions at different levels, international and local NGOs, private companies and communities affected by the Lower Sesan II project. The workshop engaged participants in knowledge sharing and active discussion about the challenges of good water governance so that perspectives from dam-affected communities, especially the voices of poor women and men, inform and influence policy-making processes to achieve fair, inclusive and sustainable development outcomes. In March, the team, in collaboration with the National University of Singapore and the NGO Forum on Cambodia (project partners), organised a second training day on negotiation skills for representatives of dam-affected communities and NGOs taking up responsibilities for protecting local community interests related to dam construction and operation.

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CDRI UPDATE

MAJOR EVENTS

4 January: CDRI's Executive Director met with the Minister of Education, Youth and Sport (MOEYS) to seek his advice on directions for policy and action research that can make a meaningful contribution to the development and improvement of higher education and vocational training. Also present were several senior officers working on higher education policy, including the Director General of the Higher Education Department.

5-6 January: The Executive Director was invited to give the keynote speech on the theme "Cambodian Education Development" at the Forum on Building Research Culture in Cambodia's Universities organised by the Royal University of Phnom Penh (RUPP).

20 January: The Executive Director was invited to participate in the formulation of the "APSARA Code of Conduct" for researchers working on Angkor history and culture at APSARA headquarters in Siem Reap. This activity is part of APSARA Authority's strategy to build institutional research capacity and expertise.

5-6 February: An Education Consultation Meeting on the theme "Higher Education Policy and Action Research for Cambodia" was held in Kirirom. The purpose was to establish an active dialogue with key education stakeholders to elicit their feedback and thus ensure the relevance of the proposed research activities under the education project funded by Australia's Department of Foreign Affairs and Trade (DFAT). The meeting was attended by representatives from MOEYS, public and private universities, the private sector, and scholars of higher education.

10 February: The Executive Director was invited to give a lecture on "Lifelong Learning" at "Experts' Reflections on Cambodia's Education 2030 Roadmap for Actions", an event organised by MOEYS in Phnom Penh. This forum was a good opportunity for the Executive Director to interact with senior officers from MOEYS and school teachers from various provinces and to share ideas on how to encourage students and teachers to be lifelong learners within the context of Sustainable Development Goal (SDG) 4 – to ensure inclusive and quality education for all and promote lifelong learning.

19 February: Dr Susan Stone, Director of Trade, Investment and Innovation Division, ESCAP, visited CDRI to exchange ideas with the Executive Director on the role of science, technology and innovation in promoting sustainable development and achieving the SDGs.

4 March: Senior managers and researchers attended a networking reception organised by Canada's

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