"Credit Availability and Internal Migration: Evidence from Thailand" Supplementary Material

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Figure A1. Migration Rate by Region and Village Size (1998-2007).

Notes: Small and Large Villages are defined according to the median size of 109 households. Northeast stands for north-eastern region (Sisaket and Buriram) represented by light grey lines; Centre stands for central region (Lop Buri and Chanchoengsao) represented by darker lines.

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| | Non m | nigrant | Mig | rant | Tests |
|-----------------------|---------|-----------|---------|-----------|---------|
| | Mean | St.Dev | Mean | St.Dev | p-value |
| Income and assets | | | | | |
| Agriculture | 0.55 | | 0.61 | | 0.00 |
| Net Income | 102,722 | 168,784 | 106,899 | 266,112 | 0.46 |
| Assets Stock | 62,338 | 162,966 | 56,771 | 95,684 | 0.22 |
| Land stock | 694,524 | 1,621,951 | 587,889 | 1,415,949 | 0.02 |
| Kinship Transfers | 18,176 | 30,038 | 22,463 | 51,521 | 0.00 |
| Borrowing | | | | | |
| VFP borrower | 0.35 | | 0.41 | | 0.00 |
| VFP loan | 16,818 | 9,017 | 15,902 | 7,171 | 0.04 |
| Other formal loan | 49,020 | 63,763 | 43,096 | 44,924 | 0.88 |
| Informal loans | 43,472 | 92,366 | 42,797 | 93,459 | 0.15 |
| Default | 0.26 | | 0.28 | | 0.07 |
| Formal default rate | 0.16 | | 0.17 | | 0.56 |
| Informal default rate | 0.10 | | 0.10 | | 0.48 |
| Village type/size | | | | | |
| Village Size | 179 | 334 | 145 | 201 | 0.00 |
| North-east Region | 0.48 | | 0.71 | | 0.00 |
| Village Size(North) | 122 | 66 | 121 | 63 | 0.00 |
| Village Size(Centre) | 232 | 454 | 203 | 353 | 0.00 |
| Small village | 0.50 | | 0.49 | | 0.43 |
| Village Size(Small) | 78 | 21 | 78 | 20 | 0.46 |
| Village Size(Large) | 279 | 450 | 208 | 265 | 0.00 |

Table A1. Summary statistics for non-migrant and migrant households (1998-2007).

Notes: Pooled data for non-migrant (6,110 obs.) and migrant households (1,400 obs.). The table reports mean and St.Dev for characteristics related to income generation, borrowing and village characteristics. Monetary variables are expressed in 2001 prices and they are calculated conditional on having made at least one transaction. Tests p-value: χ^2 for binary variables, t-test with equal or unequal variance for levels.

Table A2. Orthogonality of regressors: Migration on VFP and instruments residuals.

| | Short | Medium |
|--------------|---------|----------|
| | Term | Term |
| Residuals | 0.041* | 0.038*** |
| | (0.024) | (0.015) |
| VFP | -0.025 | -0.031** |
| | (0.022) | (0.013) |
| Controls | Yes | Yes |
| Observations | 4506 | 7510 |
| | | |

Notes: 2SLS second stage regression for short and medium term. Controls as main specification. Significance: * p < .05, *** p < .01.

| | 0 | LS | 2SLS S | hort term | 2SLS Me | edium term |
|-----------------|-----------|-----------|-----------|-----------|-----------|------------|
| | Short | Medium | First | Second | First | Second |
| | (I) | (II) | (III) | (IV) | (V) | (VI) |
| 2002*inv V size | | | 81.513*** | | 81.420*** | |
| | | | (9.664) | | (9.695) | |
| 2003*inv V size | | | 68.448*** | | 68.463*** | |
| | | | (9.585) | | (9.651) | |
| 2004*inv V size | | | | | 83.810*** | |
| | | | | | (5.886) | |
| 2005*inv V size | | | | | 61.717*** | |
| | | | | | (16.022) | |
| 2006*inv V size | | | | | 74.951*** | |
| | | | | | (6.563) | |
| 2007*inv V size | | | | | 61.590*** | |
| | | | | | (9.940) | |
| VFP | 0.007 | -0.006 | | -0.039 | | -0.043** |
| | (0.011) | (0.007) | | (0.031) | | (0.022) |
| Head is male | 0.146*** | 0.061* | 0.186*** | 0.153*** | 0.132** | 0.065** |
| | (0.050) | (0.031) | (0.072) | (0.050) | (0.058) | (0.031) |
| Head age | 0.042*** | 0.026*** | 0.046** | 0.046*** | 0.043*** | 0.028*** |
| | (0.011) | (0.007) | (0.020) | (0.011) | (0.011) | (0.007) |
| Head age sq. | -0.036*** | -0.023*** | -0.039** | -0.039*** | -0.038*** | -0.025*** |
| (/100) | (0.009) | (0.006) | (0.017) | (0.009) | (0.009) | (0.006) |
| Head education | 0.008 | 0.009 | 0.005 | 0.009 | 0.024* | 0.010* |
| | (0.006) | (0.006) | (0.016) | (0.007) | (0.013) | (0.006) |
| N adults male | -0.161*** | -0.098*** | 0.005 | -0.161*** | 0.040** | -0.096*** |
| | (0.013) | (0.009) | (0.018) | (0.013) | (0.017) | (0.009) |
| N adults female | -0.099*** | -0.092*** | 0.050** | -0.098*** | 0.049*** | -0.090*** |
| | (0.019) | (0.014) | (0.020) | (0.019) | (0.018) | (0.014) |
| N of children | -0.012 | -0.021** | 0.027 | -0.009 | 0.026* | -0.020** |
| | (0.014) | (0.010) | (0.017) | (0.014) | (0.015) | (0.010) |
| Head is farmer | -0.025 | -0.019 | -0.014 | -0.027 | -0.013 | -0.020* |
| | (0.017) | (0.012) | (0.029) | (0.017) | (0.029) | (0.012) |
| Stock of Wealth | -0.00001 | -0.00002 | 0.00001 | -0.00001 | -0.00002 | -0.00002 |
| | (0.00003) | (0.00003) | (0.00006) | (0.00003) | (0.00005) | (0.00003) |
| Constant | -0.774** | -0.347* | | | | |
| | (0.321) | (0.201) | | | | |
| Fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 4506 | 7510 | 4506 | 4506 | 7510 | 7510 |
| \mathbf{R}^2 | 0.13 | 0.08 | | 0.12 | | 0.07 |
| Kleibergen-Paap | | | | 41.96 | | 47.96 |
| Hansen J | | | | 0.51 | | 2.92 |
| p-value | | | | 0.48 | | 0.71 |

Table A3. Determinants of migration: OLS and 2SLS models, full table.

Notes: Balanced panel data for short (1998-2003) and medium term (1998-2007). Col. I-II report OLS model, Col. III-VI the 2SLS model. Standard errors in parentheses, clustered at village level. The OLS estimates are not distinguishable from zero, due to either measurement error or to the existence of a positive correlation with the error term due to self-selection into credit (or both).

| | Fi | rst stage: VFP o | on instruments | | |
|----------------------|-----------------|---|---|---|-----------|
| Lags post take-up | 1 | 2 | 3 | 4 | 5 |
| 2002*inv V size | 01 011444 | 01 61 6444 | 01 402*** | 01 101 444 | 01 260*** |
| | 81.911*** | 81.616*** | 81.403*** | 81.491*** | 81.362*** |
| | (9.390) | (9.004) | (9.719) | (9.098) | (9.700) |
| 2003*inv V size | 50 971*** | 68 810*** | 68 607*** | 68 575*** | 68 330*** |
| | (12.596) | (9.618) | (9.672) | (9.635) | (9.656) |
| 2004*' 17 ' | (| (,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | (,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | (,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | (2.0000) |
| 2004*1nv V size | 41.206*** | 60.429*** | 83.967*** | 83.893*** | 83.674*** |
| | (6.770) | (10.981) | (5.845) | (5.834) | (5.856) |
| 2005*inv V size | | | | | |
| 2005 111 V 5120 | 31.564*** | 45.503*** | 63.722*** | 61.762*** | 61.556*** |
| | (7.803) | (9.114) | (13.076) | (15.982) | (16.004) |
| 2006*inv V size | 40 101*** | 52 250*** | 70 114*** | 70 740*** | 74 025*** |
| | 42.121^{++++} | (12,805) | (12.114^{+++++}) | (9.742^{***}) | (6.521) |
| | (10.078) | (12.893) | (15.155) | (9.363) | (0.331) |
| 2007*inv V size | 35,943*** | 47.614*** | 58.384*** | 68.859*** | 72.651*** |
| | (7.234) | (8.266) | (10.381) | (13.621) | (21.245) |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Observations | 4848 | 5425 | 5990 | 6534 | 7052 |
| | Secon | d stage: migrat | ion on VFP crec | lit | |
| Lags post | 1 | 2 | 3 | 4 | 5 |
| take-up | 1 | 2 | 5 | | |
| 1 lag after VFP | -0.038 | | | | |
| | (0.028) | 0.020 | | | |
| 2 lags after VFP | | -0.039 | | | |
| 3 lags after VED | | (0.030) | 0.047* | | |
| 5 lags after VIT | | | (0.047) | | |
| 4 lags after VFP | | | (0.025) | -0.045* | |
| | | | | (0.024) | |
| 5 lags after VFP | | | | × / | -0.043* |
| C . | | | | | (0.022) |
| Controls | Ves | Ves | Ves | Ves | Ves |
| Observations | 4848 | 5425 | 5990 | 6534 | 7052 |
| R^2 | 0.11 | 0.10 | 0.09 | 0.09 | 0.08 |
| Kleibergen-Paap | 20.76 | 22.00 | 49.99 | 50.60 | 50.82 |
| Hansen J | 7.45 | 2.01 | 1.54 | 1.68 | 2.58 |
| p-value | 0.19 | 0.85 | 0.91 | 0.89 | 0.76 |

Table A4. IV Fixed Effects Model with sample cut-off after first-time borrowing.

Notes: Sample 1998-2007, 2SLS model. In each column the data for VFP borrowers is dropped after a number of lags since initial borrowing. Top panel reports the first stage, the bottom the second stage where the coefficient for VFP is reported. Same controls and clustering as the main specification (full table available on request).

| End-year | Short | | End-year | Short | Medium |
|----------------|--------|----------|----------------|--------|----------|
| 2003 | | | 2008 | | |
| VFP | -0.023 | | VFP | -0.037 | -0.041** |
| | (0.03) | | | (0.03) | (0.02) |
| Obs. | 5034 | | Obs. | 4440 | 8140 |
| R^2 | 0.13 | | \mathbf{R}^2 | 0.12 | 0.07 |
| K-P | 64.35 | | K-P | 41.31 | 41.66 |
| End-year | Short | Medium | End-year | Short | Medium |
| 2004 | | | 2009 | | |
| VFP | -0.029 | -0.039 | VFP | -0.036 | -0.040* |
| | (0.03) | (0.03) | | (0.03) | (0.02) |
| Obs. | 4890 | 5705 | Obs. | 4320 | 8640 |
| \mathbf{R}^2 | 0.13 | 0.11 | \mathbf{R}^2 | 0.12 | 0.07 |
| K-P | 47.89 | 81.82 | K-P | 37.12 | 36.33 |
| End-year | Short | Medium | End-year | Short | Medium |
| 2005 | | | 2010 | | |
| VFP | -0.039 | -0.047* | VFP | -0.038 | -0.039* |
| | (0.03) | (0.02) | | (0.03) | (0.02) |
| Obs. | 4752 | 6336 | Obs. | 4284 | 9282 |
| R^2 | 0.12 | 0.09 | \mathbf{R}^2 | 0.12 | 0.07 |
| K-P | 46.51 | 70.64 | K-P | 36.12 | 32.27 |
| End-year | Short | Medium | End-year | Short | Medium |
| 2006 | | | 2011 | | |
| VFP | -0.04 | -0.043* | VFP | -0.039 | -0.039* |
| | (0.03) | (0.02) | | (0.03) | (0.02) |
| Obs. | 4644 | 6966 | Obs. | 4230 | 9870 |
| \mathbf{R}^2 | 0.12 | 0.08 | \mathbf{R}^2 | 0.12 | 0.07 |
| K-P | 45.9 | 59.74 | K-P | 35.87 | 29.88 |
| End-year | Short | Medium | | | |
| 2007 | | | | | |
| VFP | -0.039 | -0.043** | | | |
| | (0.03) | (0.02) | | | |
| Obs. | 4506 | 7510 | | | |
| \mathbb{R}^2 | 0.12 | 0.07 | | | |
| K-P | 41.96 | 47.96 | | | |

Table A5. Migration on VFP credit: Second stage regression with balanced panels from 1998to a specific end-year.

Notes: Set of balanced panels between 1998-2003 to 1998-2011 (each end-year is in bold). Each column represents the second stage regression of VFP coefficient for short term (2003) or medium term (end year of the panel), with observation per panel (Obs.), R^2 and the Kleibergen-Paap F statistic (K-P). All estimations are with same controls and cluster as main specification; Hansen J test not rejected in all instances (full tables available on request).

| Second stage | (] | [) | (I | I) | (I | II) |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| - | Short | Medium | Short | Medium | Short | Medium |
| VFP | -0.03 | -0.038* | -0.031 | -0.035* | -0.034 | -0.033* |
| | (0.030) | (0.021) | (0.027) | (0.018) | (0.027) | (0.018) |
| Head is male | 0.111** | 0.035 | 0.138*** | 0.060** | 0.151*** | 0.061** |
| | (0.047) | (0.026) | (0.049) | (0.028) | (0.052) | (0.028) |
| Head age | 0.049*** | 0.029*** | 0.043*** | 0.026*** | 0.043*** | 0.023*** |
| | (0.009) | (0.006) | (0.011) | (0.007) | (0.012) | (0.006) |
| Head age sq. | -0.042*** | -0.025*** | -0.036*** | -0.023*** | -0.037*** | -0.021*** |
| | (0.008) | (0.005) | (0.009) | (0.006) | (0.010) | (0.005) |
| Head education | 0.005 | 0.009 | 0.012 | 0.010* | 0.006 | 0.006 |
| | (0.006) | (0.006) | (0.008) | (0.006) | (0.007) | (0.006) |
| N of adults male | -0.135*** | -0.073*** | -0.149*** | -0.092*** | -0.155*** | -0.096*** |
| | (0.013) | (0.009) | (0.012) | (0.009) | (0.013) | (0.010) |
| N of adults female | -0.098*** | -0.093*** | -0.090*** | -0.083*** | -0.087*** | -0.080*** |
| | (0.016) | (0.012) | (0.017) | (0.013) | (0.018) | (0.014) |
| N of children | -0.014 | -0.021** | -0.007 | -0.017* | -0.003 | -0.012 |
| | (0.011) | (0.009) | (0.013) | (0.009) | (0.013) | (0.009) |
| Head is farmer | -0.001 | 0.002 | -0.029* | -0.019* | -0.028* | -0.007 |
| | (0.016) | (0.011) | (0.016) | (0.011) | (0.017) | (0.013) |
| Stock of Wealth | -0.00003 | -0.00001 | -0.00002 | -0.00002 | -0.00003 | -0.00002 |
| | (0.00004) | (0.00003) | (0.00002) | (0.00003) | (0.00002) | (0.00003) |
| HH-Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 4506 | 7510 | 4506 | 7510 | 4260 | 6800 |
| \mathbf{R}^2 | 0.11 | 0.06 | 0.11 | 0.06 | 0.11 | 0.07 |
| Kleibergen-Paap | 41.96 | 47.96 | 41.96 | 47.96 | 43.53 | 58.61 |
| Hansen J | 0.6 | 4.05 | 0.89 | 5.72 | 0.43 | 5.94 |
| p-value | 0.44 | 0.54 | 0.34 | 0.33 | 0.51 | 0.31 |

Table A6. Robustness: Second stage 2SLS of non-seasonal migration, migration excluding schooling or reduced sample (no schooling households).

Notes: Second stage 2SLS model. Description: (I) estimates with non-seasonal migrant as dependent variable; (II) estimates with migrants (excluding any school-related migration) as dependent variable; (III) applies a sample restriction: balanced panel that excludes any household that declares to have a member migrating for educational purposes. Explanatory variables in each stage: household and time fixed effects, dummy if the head is male, head's age and its squared term (deflated by100), head's years of education, number of adult males, females, children, dummy if head primary occupation is in agriculture and stock of wealth. All monetary variables are deflated by the CPI (base year 2001) and expressed in 10,000 Baht. Standard errors in parentheses, clustered at village level.

| First stage | (I) | (III) |
|-----------------|----------|----------|
| | Short | Medium |
| inv V size | 75.00*** | 72.00*** |
| | (8.26) | (4.97) |
| Controls | Yes | Yes |
| Observations | 4506 | 7510 |
| \mathbf{R}^2 | 0.54 | 0.44 |
| Second stage | (II) | (IV) |
| | Short | Medium |
| VFP | -0.04 | -0.04* |
| | (0.03) | (0.02) |
| Controls | Yes | Yes |
| Observations | 4506 | 7510 |
| \mathbf{R}^2 | 0.12 | 0.07 |
| Kleibergen-Paap | 82.36 | 210.04 |
| | | |

Table A7. Robustness: First and second stage of migration on VFP credit (one instrument).

Notes: Model with single instrument. First stage regression: VFP credit on inverse village size in 2002. Explanatory variables as main estimation. Monetary variables deflated by CPI (2001) and expressed in 10,000 Baht. Standard errors in parentheses, clustered at village level.

| Second stage | (I) | (II) |
|-----------------|---------|----------|
| | Short | Medium |
| VFP borrower | -0.168 | -0.161** |
| | (0.131) | (0.074) |
| Controls | Yes | Yes |
| Observations | 4506 | 7510 |
| Kleibergen-Paap | 13.43 | 10.82 |
| Hansen J | 0.09 | 2.00 |
| p-value | 0.77 | 0.85 |
| | | |

Table A8. Robustness: Second stage 2SLS estimates of migration on VFP binary variable.

Notes: 2SLS Model with predicted binary VFP variable. Covariates as main specification. Monetary variables deflated by CPI (2001) and expressed in 10,000 Baht. Standard errors in parentheses, clustered at village level.

| (I) | (III) |
|--|--|
| Short | Medium |
| 72.972*** | 72.661*** |
| (11.515) | (11.573) |
| 56.064*** | 56.052*** |
| (19.068) | (19.163) |
| | 81.495*** |
| | (12.382) |
| | 87.790*** |
| | (14.381) |
| | 81.224*** |
| | (11.197) |
| | 80.413*** |
| | (11.997) |
| Yes | Yes |
| | |
| 3924 | 6540 |
| 3924 0.53 | 6540 0.44 |
| 3924 0.53 (II) | 6540 0.44 (IV) |
| 3924 0.53 (II) Short | 6540 0.44 (IV) Medium |
| 3924 0.53 (II) Short -0.029 | 6540 0.44 (IV) Medium -0.074* |
| 3924 0.53 (II) Short -0.029 (0.057) | 6540 0.44 (IV) Medium -0.074* (0.038) |
| 3924 0.53 (II) Short -0.029 (0.057) Yes | 6540 0.44 (IV) Medium -0.074* (0.038) Yes |
| 3924 0.53 (II) Short -0.029 (0.057) Yes 3924 | 6540 0.44 (IV) Medium -0.074* (0.038) Yes 6540 |
| 3924 0.53 (II) Short -0.029 (0.057) Yes 3924 0.13 | 6540 0.44 (IV) Medium -0.074* (0.038) Yes 6540 0.07 |
| 3924 0.53 (II) Short -0.029 (0.057) Yes 3924 0.13 21.48 | 6540 0.44 (IV) Medium -0.074* (0.038) Yes 6540 0.07 16.76 |
| 3924 0.53 (II) Short -0.029 (0.057) Yes 3924 0.13 21.48 0.92 | 6540 0.44 (IV) Medium -0.074* (0.038) Yes 6540 0.07 16.76 1.99 |
| | (I) Short 72.972*** (11.515) 56.064*** (19.068) Yes |

Table A9. Robustness: Determinants of migration with a reduced sample of village size in between 50 and 250 households.

Notes: Specification for reduced panel (654 groups). The estimates are performed with a balanced panel that excludes seven villages: two with size of 30 and 34 households, and other seven with size comprised between 268 and 3194 households. Controls as main specification. Standard errors in parentheses, clustered at village level.