



## Smallholder Contract Farming of Swine in Northern Viet Nam: Type and Scale of Production

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### 1. Background

The rapid growth in demand for pork in Viet Nam presents an opportunity for rural households keeping swine to improve their incomes. As large proportion of livestock production in Viet Nam stems from smallholder producers, who generally have limited access to markets, inputs, and livestock services, integrating these rural smallholders into the growth process could serve Viet Nam's policy goal of poverty reduction. One possibility of closer integration would be through institutional arrangements that provide smallholders better access to markets and livestock services.

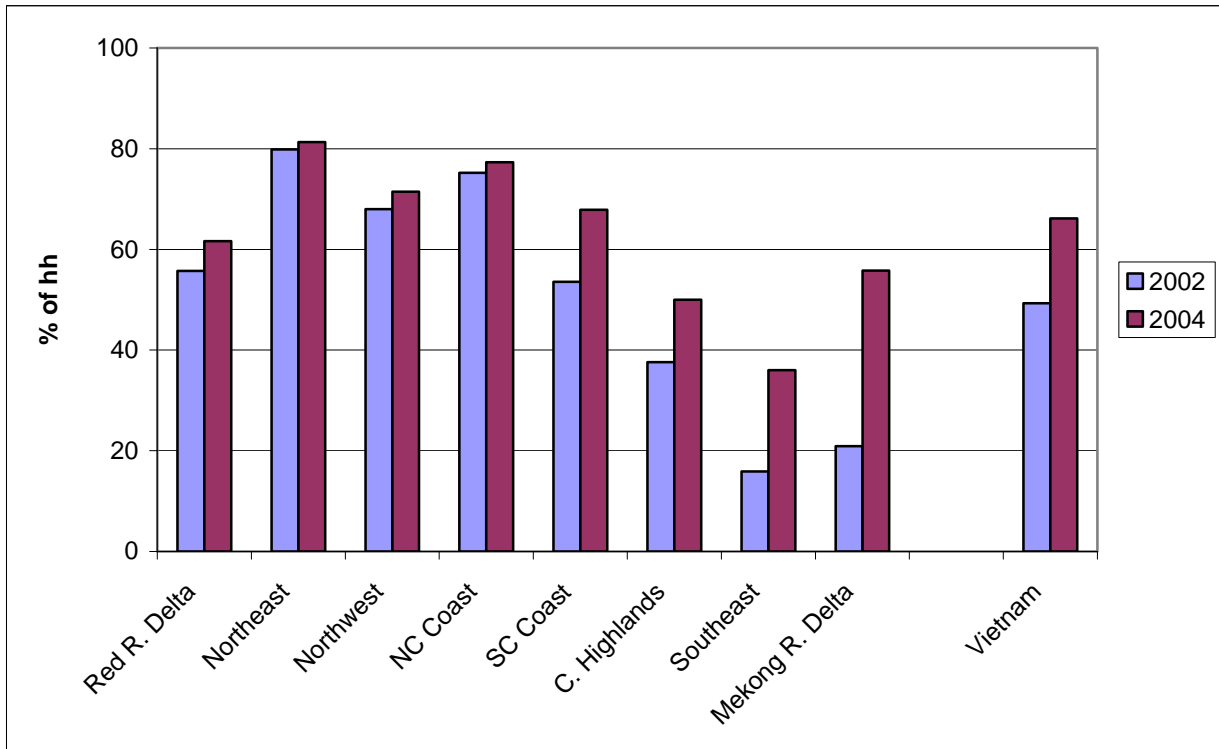
In partnership with national and international research institutions, PPLPI initiated a field research project entitled 'Contract Farming for Equitable Market-Oriented Smallholder Swine Production in Northern Viet Nam' to identify forms of institutional arrangements in swine production that would enable smallholder producers to benefit from the demand growth for pork. The ultimate objective of the study to identify a set of policy and other intervention options for the facilitation of profitable, market-oriented livestock farming partnerships between smallholders and larger enterprises.

This brief report summarizes initial findings on the major types of production activities swine producers engage in, as well as their scale of operations, in relation to their institutional production and marketing arrangements.

## 2. Pig Production in Viet Nam

A large proportion of rural households in Viet Nam keep pigs. Figure 1 presents the proportion of rural households, which derive some income from pigs in Viet Nam, by region, and the change in these proportions between 2002 and 2004.

**Figure 1:** The proportion of rural households earning some income from pigs in Viet Nam, by region, 2002 and 2004.



Source: VHLSS 2002 and 2004.

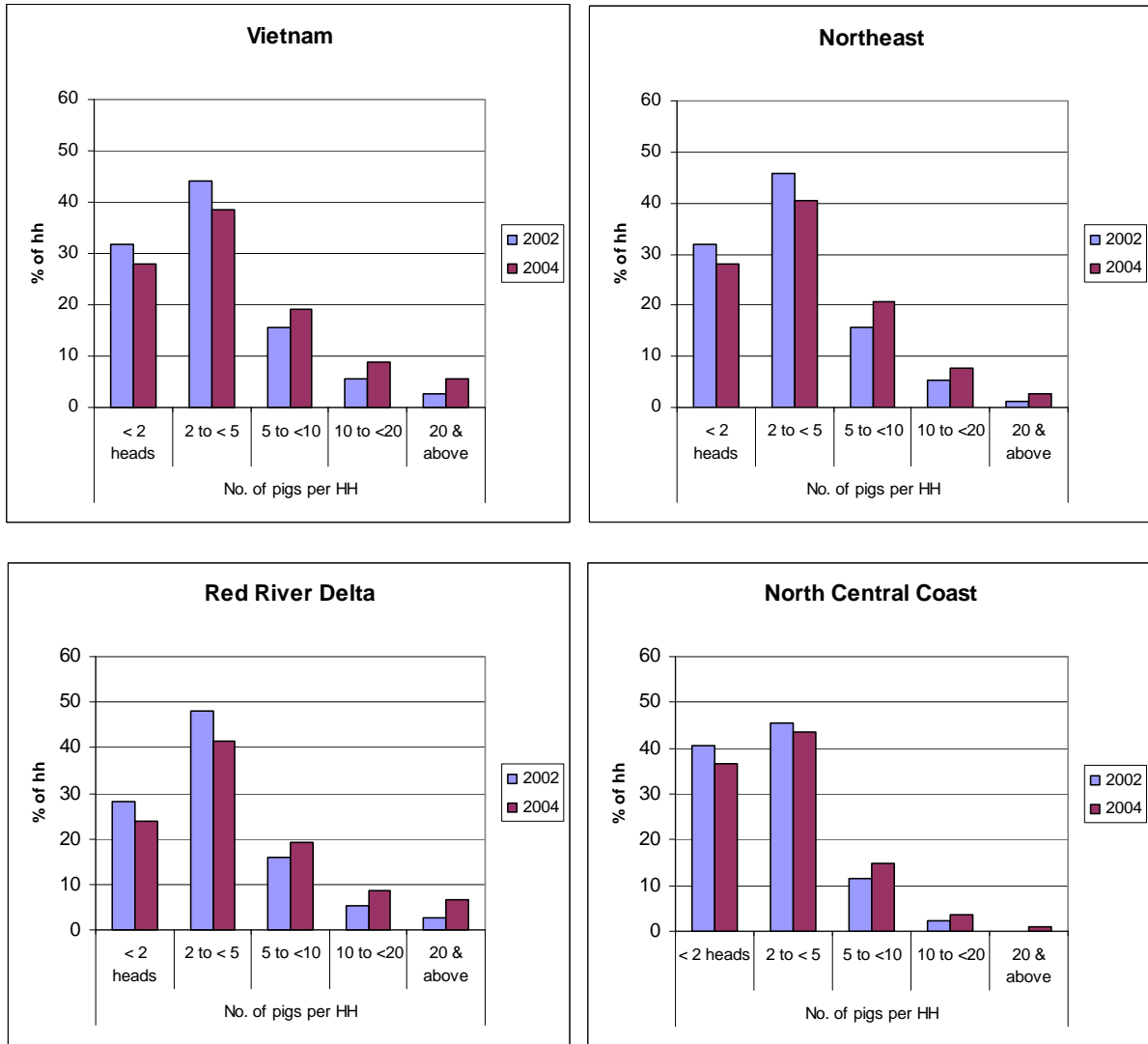
Figure 1 shows that a higher proportion of households are engaged in pig production in the North than in the South. The figure also shows that between 2002 and 2004 the proportion of households deriving income from raising pigs has risen for Viet Nam as a whole and in all of its regions. The rapid growth of the pig sector in Viet Nam in recent years, and the increasing proportion of households participating in pig production are a clear indication of the income generating opportunities that the sector currently presents to rural households.

As the pig sector has grown, the scale of pig production has also risen. Nevertheless, the majority of producers are still smallholders. Figure 2 displays the distribution of estimated<sup>1</sup>

<sup>1</sup> The number of pigs produced per household per year, using the VHLSS 2002 and 2004, were estimated from the volume of pig production in kg live-weight per household, using a conversion factor of 60 kg = 1 pig. This will lead to underestimates where households produce piglets rather than slaughter hogs.

annual household pig production in Viet Nam as a whole, and in the northern regions, where this research was undertaken, in 2002 and 2004.

**Figure 2: Scale of household pig production in Viet Nam and in the northern Regions, 2002 and 2004**



Source: VHLSS 2002 and 2004.

Figure 2 shows that for Viet Nam as a whole around 85 percent of households produce less than 10 pigs per year. In the Northeast and the North Central Coast that proportion is even higher, while in the Red river delta that proportion is slightly lower.

Overall, the proportion of households producing less than five pigs per year is declining and the proportion of households producing more than five pigs per year is therefore increasing, a change that is particularly marked in the Red river delta.

The above background information on pig production was derived from secondary data. The following sections on type of pig production activity and scale of operation are based on data obtained from the project field surveys in four provinces in three northern regions of Viet Nam.

### 3. Methods

Field surveys were conducted in the provinces of Ha Tay and Thai Binh in the Red River Delta, in Bac Giang in the Northeast, and Thanh Hoa in the North Central Coast. Four hundred swine producing households were included in the sample, consisting of 34 swine producers with formal (written) contracts with the integrators, 166 producers with informal (unwritten) contracts with input suppliers or output traders, and 200 producers without any form of contracts (independents). For independent producers and households with informal contracts, samples within each group were selected randomly. For producers with formal contracts, the 34 respondents consisted of the total number of identified formal contract growers in the two provinces where this type of arrangement existed. Information was obtained on household and farm characteristics, type of pig production activity, number of pigs, and production performance. Information about market linkages and marketing chains was also gathered to assess which type of production and marketing arrangement was most profitable for the producer. Thirty-five (35) pig traders were interviewed to obtain information regarding their relations with their suppliers, as well as to construct marketing chains.

### 4. The Choice of Pig Production Activity

The type of pig production activities engaged in by the farm households could be determined by the type of pig stock kept and the output produced and marketed. Four typologies of pig raising activities could be identified and are described below.

#### **Type 1: Farrow-to-weaning**

This activity involves the keeping of breeding sows for the production of piglets, which are raised until weaning age. For formal contract farmers, weaning age is when the piglets reach 4 to 6 kg (14 to 21 days). For other farmers whose piglets are marketed as inputs to farmers engaged in pig fattening, the weaning age is around 2 months, at which time the weaners reach a weight of 8 to 15 kg. For farmers whose piglets are intended for the export market, the piglets are sold when they reach the weight of 4 to 8 kg. The exporting companies process the piglets in their slaughterhouses and export them as frozen whole carcass, mostly to Hong Kong and Malaysia. Common terms describing this activity are 'pig breeding' and 'piglet production'.

### **Type 2: Farrow-to-finish**

This production activity is similar to the previous one with the keeping of breeding sows and production of offspring. It differs from Type 1 in that the pigs are raised and fattened to maturity, with the final product being slaughter hogs. This type of activity is also described as ‘full-cycle operation’.

### **Type 3: Grow-to-finish**

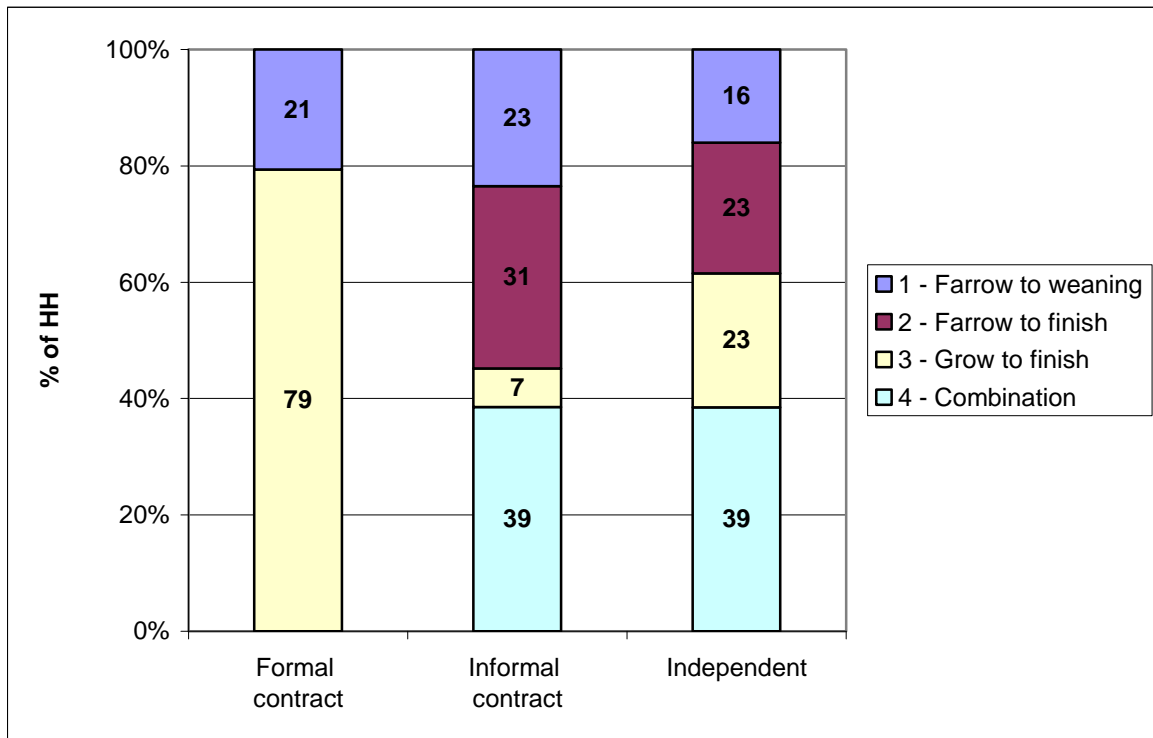
Similar to Type 2, this type of production activity delivers fattened slaughter hogs as final output, but differs from the former in that the purchased stock are weaned piglets for fattening rather than breeding sows. For formal contract growers, the piglets of exotic breed are received at 4 to 6 kg, and delivered to the integrator at 80 to 120 kg, over a period of 3.5 to 4 months. For other farmers using other breeds (crosses), selling weight is 60 to 90 kg, achieved over 3 to 4 months. A common term for this activity is ‘pig fattening’.

### **Type 4: Combinations (Multiple Activities)**

While the first three types of production involve specialized activities, Type 4 consists of a combination of any of the previous types and thus can produce different types of output for the market. This type of activity could involve the purchase of weaners for pig fattening but could also include the keeping of breeding sows, from which some output could be sold as piglets, and some fattened to be sold as slaughter hogs. Among all activity types, this one is the most flexible.

The relative frequency of the type of production activity engaged in by the household respondents, in relation to their contractual arrangements, is shown in Figure 3.

**Figure 3:** Type of pig production activity of sample households in relation to contract arrangements, northern Viet Nam, 2005.



All farmers with written contracts with integrators engaged in two distinct types of activity only: close to 80 percent were specialized in grow-to-finish operations while the remainder specialized in the farrow-to-weaning activity, i.e. piglet production.

Among farmers without formal contracts with an integrator, all four activity types were found. The similarity between the independent farmers and those with informal contracts was that the largest proportion of farmers in the respective sample (39%) combined various forms of production (Type 4 producers). For the remainder of the activity types, the distribution differed. Among farmers with informal contracts, the second largest group (31%) consisted of those engaged in farrow-to-finish (Type 2) activities, a proportion that was higher compared to the same category among independent farmers. Among independent producers, the second most popular type of activity was evenly split between farrow-to-finish (Type 2) and grow-to-finish (Type 3) operations. The least frequent activity among farmers with informal contracts was grow-to-finish (Type 3), while the least frequent activity for independent farmers was farrow-to-weaning (Type 1).

Among formal contract growers, the choice of pig production activity is largely determined by what the integrators offer. Among independent producers and producers with informal agreements with cooperatives or traders, the choice of activity appears to be governed to a large extent by the farmers' desire for flexibility to take advantage of market opportunities as they arise. The second consideration would appear to relate to resource constraints. The

engagement in grow-to-finish requires the funds to purchase the weaners upfront, as well as the feed required to sustain them over the fattening period. This appears to be validated by the large discrepancy between the engagement in grow-to-finishing by those farmers that have formal contracts and those that do not, where the former do not have to purchase weaners as these are provided by their integrator. Likewise, specializing in the farrow-to-finish activity requires access to the resources needed to complete the full cycle of the activity, particularly the funds to purchase feed required to grow the pigs to optimal marketing age (weight) for slaughtering.

## 5. Size of Pig Holdings

The pigs kept by the household can either be breeding sows, growers/fattening pigs, or both, depending on the type of pig production activity the households engages in. Producers specializing in farrow-to-weaning activity (Type 1) do not keep fatteners or growers, while those engaged in grow-to-finish (Type 3) do not keep breeding sows. Fatteners / growers are kept over a relatively short growing period (3 to 4 months), and sold for slaughter thereafter. Sows are kept over their reproductive life span.

The type of production activity engaged in by the households according to production and marketing arrangements, as shown in Figure 3, reveals to a large extent the incidence of the holding of sows or fatteners / growers. On the one hand, close to 80 percent of the formal contract growers did not keep sows, while 93 percent of the producers with informal contracts, and 77 percent of the independent producers did keep sows. Table 1 shows the mean number of pigs per producer according to activity and contract arrangement.

**Table 1:** Mean number of sows and fatteners kept by sampled pig producing households, by activity type and contract arrangement, northern Viet Nam, 2005 (pigs per household)

<b>STOCK / ACTIVITY</b>	<b>Formal Contract (n = 34)</b>	<b>Informal Contract (n = 166)</b>	<b>Independent (n = 200)</b>
<b>Sows</b>			
1 - Farrow-to-wean	600	3	4
2 - Farrow-to-finish		12	11
4 - Combination		15	6
<b>Fatteners / growers</b>			
2 - Farrow-to-finish		27	26
3 - Grow-to-finish	619	9	11
4 - Combination		32	10

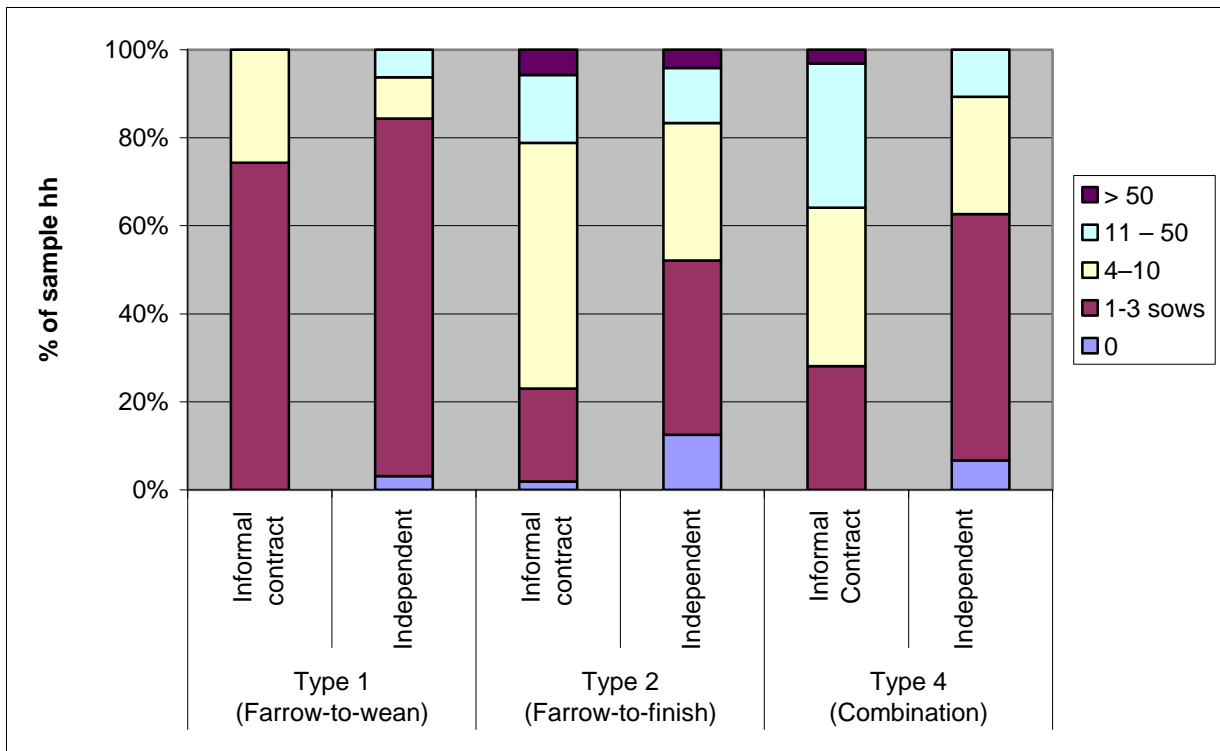
As expected, pig producers engaged in formal contract growing had far larger mean herd sizes than farm households without formal contracts. Among producers without formal contracts, the mean number of fattening pigs was on the whole higher than the mean number of sows, a finding to be expected. With respect to number of sows, farms engaged in the farrow-to-weaning (Type

1) activity had the lowest average number (3 to 4 sows per household), irrespective of whether producers had informal contracts or were independent. Farrow-to-finish (Type 2) farms had similar and larger mean numbers of sows (11 to 12) in both producer groups, while the mean number of sows kept by Type 4 operations was considerably higher for producers which had informal contracts (15 sows) than for independent producers (6 sows). The comparison of numbers of fattening / grower pigs between independent producers and those with informal contracts showed some similarities and differences according to production activity. Both groups had relatively low numbers of pigs (9 to 11 fatteners) when engaged in the grow-to-finishing activity. In the farrow-to-finishing activity, again, both groups had similar, but relatively larger numbers of pigs (26 to 27 fatteners). in the combined activity (Type 4), however, producers with informal contracts on average had three times more fatteners (32) than independent producers (10 fatteners).

While differences and similarities in scale of activity can be compared by referring to the mean number of pigs, similarities and differences could also be seen in terms of the distribution of pig herd sizes. Figure 4 displays the distribution of herd sizes by producers without formal contracts. (The figure includes producers without sows at the time of the field survey.)

**Number of Sows**

**Figure 4:** Distribution of the number of sows kept by informal contract and independent pig producers by activity type, northern Viet Nam, 2005.



Source: Field Survey, 2005-06



Producers engaged in farrow-to-weaning (Type 1) activity, whether independent or with informal contracts, mostly fell into in the smallest category of producers keeping just 1 to 3 sows. In the farrow-to-weaning activity, keeping this small number of sows could be classified as 'small-scale'. About a quarter of producers having informal contracts fell into the next category with 4 to 10 sows. As a household-level activity, this scale of production could already be classified as 'medium-scale'.

Among producers engaged in the farrow-to-finish activity (Type 2), those with informal contracts fell mainly into the second size category (4-10 sows), while the greatest proportion of the independent farmers were found in the lowest size category (1-3 sows). In this activity group, there were already significant proportions of producers, both independent and with informal contracts, with more than 10 sows. At the level of a household pig enterprise these operations could already be classified as a relatively 'large-scale', although still very small in comparison with the 600-sow operations of pig producers with formal contracts.

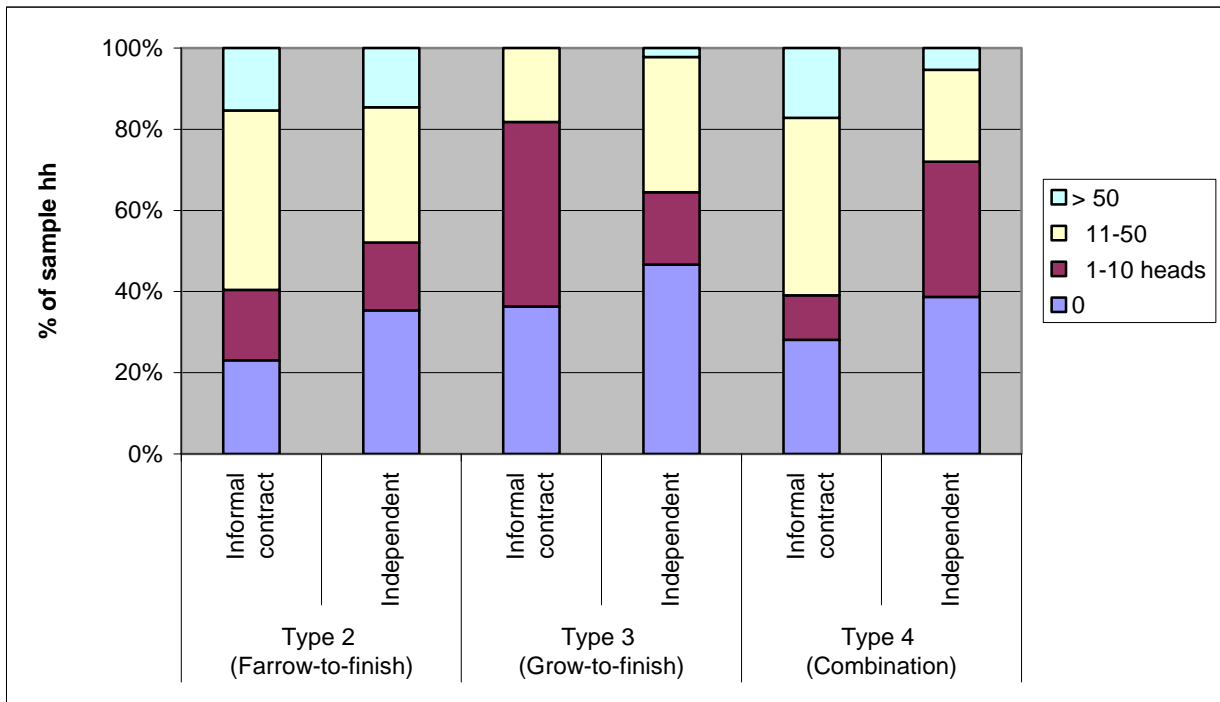
Among producers engaged in combined activities (Type 4), there was a clear difference in the distribution of sow numbers between those with informal contracts and those which are independent. Most producers with informal contracts were 'medium-scale' (4 to 10 sows) and 'large-scale' (>10 sows) while most of the independent producers were concentrated in the 'small-scale' group.

### **Number of Fattening Pigs**

The number of fattening pigs indicates the potential sales for the current production cycle when the pigs have reached the marketable weight as slaughter hogs. Figure 3 displays the distribution of the number of fattening pigs kept by different producer types at the time of the survey.

Figure 3 shows that a quite significant proportion of producers engaged in finished pigs with no fattening pigs at the time of the survey. These results include missing observations and actual 'zero' fatteners when the last batch had been sold and no new replacement fatteners had been obtained. As the classification of fattener/grower does not include suckling piglets kept by producers engaged in Type 2 or Type 4 activity, the observation of 'zero' fatteners may include farms, in which piglets constitute the growing stock. Thus, in contrast to very minor occurrence of 'zero sows', the higher incidence of 'zero fatteners' also reflects the cyclical pattern of pig fattening. This pattern is likely to be more marked among smallholders who only raise one batch at a time, with no upcoming fatteners before the current batch is sold.

**Figure 3:** Distribution of the number of fattening pigs of informal contract and independent pig producers by activity type, northern Viet Nam, 2005.



Source: Field Survey, 2005-06

Focusing on the incidence of 'zero' pigs, a consistent pattern is that the independent producers consistently had higher proportions of households with zero fattener / grower holdings than those with informal contracts. This may reflect the longer 'lag time' that independent producers as a group experience between production cycles. On the whole, considering type of production activity, engagement in grow-to-finishing had the highest proportions of households with zero pigs. This may be a reflection of the discontinuous nature of this activity, where households are beset by constraints in obtaining replacement stock after the previous batch has been sold.

In households with fattening pigs at the time of the survey, some patterns could also be observed. In the farrow-to-finishing (Type 2) activity, both in households with informal contracts and those operating independently, the majority of producers fell into the group that had 11 to 50 fattening pigs, i.e. could be considered as 'medium-scale'. Quite a significant proportion of these Type 2 producers even had more than 50 fatteners, already a relatively large-scale operation for Vietnamese conditions.

Among the grow-to-finish (Type 3) producers, the majority of those without any type of contract were of medium scale (11 to 50 fatteners) while most of the producers with informal contracts only kept 1 to 10 fatteners. However, it should be noted that there were only a few producers with informal contracts which engaged in this type of activity (7%).

For Type 4 producers, the distribution of number of fatteners differed between those with informal contracts and those without. Most producers with informal contracts were in the medium-scale group (11 to 50 fatteners), with a significant proportion (17 %) also in the large-scale category (>50 fatteners), while the majority of the independent producers were in the small-scale category (1 to 10 fatteners).

## 6. Conclusions

- All farms with formal contracts are very large by Vietnamese standards. In contrast, most other farmers were small- to medium-scale producers. The very small number of pig producers with formal contracts indicates that integrators clearly prefer to engage with a limited number of highly capitalized large farmers rather than to deal with a large number of smallholder producers, despite their high prevalence in northern Viet Nam.
- Company integrators prefer to engage into contracts for short-duration pig production activities (grow-to-finish, farrow-to-weaning), with rigidly-defined inputs and outputs. Short-duration activities minimize the time span pigs are in the hands of the farmer, which may theoretically reduce production risk on the part of the integrator.
- Farmers without formal contracts have a preference for flexibility in their pig production activities, with most keeping sows for breeding, selling piglets when attractive opportunities arise or when the household needs cash, or keeping the growing stock for a longer period to obtain higher returns by selling pigs as mature slaughter hogs.
- Households without formal contracts, which specialize in farrow-to-weaning or grow-to-finish operations are mostly small-scale producers. The former is the least feed-intensive activity. The latter requires resources to purchase the growing stock and to purchase feed required to finish the fatteners. The capital requirements for purchased inputs for the grow-to-finish type of activity may function as barrier for households to expand scale.
- Households specializing in the full-cycle farrow-to-finish activity are mostly medium-scale producers. This activity also requires relatively larger initial resources to complete the activity and take full advantage of its income generation potentials.
- For households engaged in combined activities, independent producers are mostly small-scale operations. On the other hand, most of the households with informal contracts with market intermediaries were medium-scale producers. This may indicate that a functional linkage with an input provider or an output outlet, even if only informal, assists smallholders to move to a higher scale of production. A deeper investigation of this observation is thus warranted.

## 7. References

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## 8. Contacts and Further Information

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