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Eric D. Ramstetter
Asian Growth Research Institute and Kyushu University, Japan
and
Kien Trung Nguyen
The University of Danang, School of Economics, Vietnam

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Eric D. Ramstetter*, Asian Growth Research Institute and Kyushu University
and
Kien Trung Nguyen, The University of Danang, School of Economics

Abstract

This paper examines the role of foreign multinational enterprises (MNEs) have played in Vietnam's exports in 1995-2014. Economy-wide estimates suggest MNE share of Vietnam's export grew from about one quarter to about two-thirds during this period. MNE shares of GDP were much smaller (6 to 18 percent); correspondingly export-production ratios were much (4.7 to 9.6 times) higher in MNEs than in the non-MNEs sector. If comparisons are limited to formal enterprises, wholly-foreign MNEs (WFs), which account for the vast majority of MNEs in Vietnam, tend to have relatively high export propensities and account for the vast majority of MNE exports. These data thus suggest that MNEs, and particularly WFs, make unusually large direct contributions to exports in Vietnam compared to other economic activities. On the other hand, these compilations cannot establish if export propensities differ significantly among ownership groups after accounting for other, related firm-level and industry-level characteristics. Most importantly, this paper highlights several substantial problems revealed by compilations of the firm-data which much be addressed before more reliable, rigorous analysis of the firm-level data will be possible.

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Keywords: Multinational enterprises, state-owned enterprises, ownership, exports

*Corresponding author, ramstetter@gmail.com

1. Introduction

In Vietnam, foreign multinational enterprises (MNEs) in Vietnam grew rapidly after the substantial reforms (*Doi Moi*) that began in 1986 and stabilization of the economy in the mid-1990s. Analyses of firm-level data for large samples of manufacturing firms from Vietnam's relatively comprehensive, annual enterprise surveys for 2000 forward also suggest that MNEs, especially exporting MNEs, tend to have relatively high productivity compared to local firms (Athukorala and Tien 2012; Ramstetter and Phan 2013). However, MNE-local productivity differentials were often insignificant when more homogeneous industry-group samples were examined. Truong et al (2015) also provide evidence that spillovers were relatively large in industries with low effective rates of protection and low shares of wholly foreign MNEs.

Other studies (Phan and Ramstetter 2004, 2009) have pointed out that MNE shares of Vietnam's exports have been much larger than corresponding shares of production or employment, for example. Moreover, the tendency for MNEs to account for relatively large shares of exports (and imports) is common in Asian host economies, and not limited to Vietnam (Ramstetter 1999a, 2012). In other words, foreign MNEs tend to have relatively high export propensities (export-sales ratios) compared to their local (non-MNE) counterparts in Vietnam and other Asian hosts such as China, Indonesia, Malaysia, and Thailand. Moreover, evidence for Indonesia and Thailand suggests that MNE-local differentials in export-sales ratios often remain highly significant statistically after accounting for other plant-level characteristics (e.g., factor intensity, scale, vintage) thought to affect export propensities (Ramstetter 1994; Ramstetter and Takii 2006; Sjöholm and Takii 2006; Ramstetter and Umemoto 2006). Studies of Indonesia, Thailand, and Vietnam also suggest a tendency for export propensities to be highest among wholly-foreign MNEs or MNEs with very large foreign ownership shares of 90 percent or more, and that these ownership-related differences

remain statistically significant after accounting for firm- or plant-level characteristics.[1]

Recently, Vietnam's enterprise surveys have included questions about exporting and allow more detailed of comparison of export propensities in foreign MNEs and local firms than previously possible. However, there are several apparent problems with the data that deserve closer attention before more rigorous analysis can be considered reliable. This paper is a first attempt to assess the nature of the information available and the patterns that can be observed in the data. After a brief review of the related literature (Section 2), we first examine economy-wide estimates of MNE shares of Vietnam's exports and trends in those shares (Section 3). We then examine the firm-level data we have been able to compile on firm exports in 2010-2012, focusing on comparisons of wholly-foreign MNEs (WOs), MNE joint ventures (JVs), state-owned enterprises (SOEs), and private firms (Section 4).[2] Finally we offer some concluding remarks, focusing on the future research agenda (Section 5).

2. Literature Review

Theory and empirical evidence suggest MNEs are likely to possess relatively large amounts of generally knowledge-based, intangible, firm-specific assets related to production technology, marketing, and entrepreneurship that should make these firms more productive than non-MNEs (Buckley and Casson 1992; Casson 1987; Caves 2007; Dunning 1993; Rugman 1980, 1985). This is reflected by larger firm size, higher factor productivity and factor returns, and/or higher capital or technology intensity. In contrast, economists since Adam Smith have long assumed that SOEs will tend to be more inefficient than private firms

[1] See Phan and Ramstetter (2009) about Vietnam, Ramstetter (1999b) and Ramstetter and Takii (2006) about Indonesia, and Ramstetter (1994) and Ramstetter and Umemoto (2006) about Thailand. Ramstetter (1999a) provides evidence for Indonesia and Singapore. Note also that firm- or plant-level distributions of foreign ownership shares are often bimodal, with one mode near zero and another near 100 percent.

[2] Data are also available for 2013, but compilations reveal unbelievably large values and strange patterns so those data are not included in this analysis. As will be seen there are also problems with data for other years, especially 2010, but these problems are far less pronounced than those revealed by compilations for 2013.

because SOE managers have weaker incentives to minimize costs than managers of private firms. Previous empirical evidence suggests that both MNEs and SOEs have tended to have relatively high productivity in Vietnam, though ownership-related differentials are often insignificant in relatively homogenous, industry-group samples (Ramstetter and Phan 2007, 2013).[3]

The theoretical literature often focuses on the tendency for MNEs to possess relatively large amounts of technology-related intangible assets such as the results of research and development (R&D) or patents, for example. Possession of these assets in relatively large amounts implies that MNEs tend to have relatively high productivity. Correspondingly, MNEs may tend to export more than non-MNEs because exporting firms first tend to be more productive than non-exporters and MNEs have relatively high productivity. However, it is very difficult to sort out the direction of causality. Does high productivity lead to exporting, or does exporting force firms to become more productive, or does causality run both directions (Bernard and Jensen 2004, Melitz 2003)?

On the other hand, it is clear MNEs also invest substantial resources in international marketing networks. These investments are sunk costs and accumulation of related assets is a key reason that some firms become able to export relatively cheaply (Roberts and Tybout 1997). Moreover, it seems equally clear that MNEs invest more in their international marketing networks than non-MNEs. Thus, even if ownership-related productivity differentials are not pervasive, it is highly possible that MNEs might have higher export propensities than non-MNEs because their investments in international marketing networks lead to lower exporting costs in MNEs. Indeed, this is an important part of the story told by

[3] SOEs also appear to be relatively productive in several other economies (Djankov and Murrell 2002; Megginson and Netter 2001). Governments often choose to establish SOEs in relatively high productivity, high wage industries such as steel, this is an important reason that SOEs may have appear to have relatively high productivity or wages in samples covering several different industries. However, even within the steel industry, firm-level evidence suggests that SOEs or former SOEs were among the most efficient producers in China, Korea and Taiwan, for example (Ramstetter and Movshuk 2005).

the previous studies of Indonesia and Thailand cited in the introduction.[4]

The other potentially important part the story relates to evidence that export propensities tend to be highest among wholly-foreign MNEs or MNEs with very large foreign ownership shares of 90 percent or more, and that these ownership-related differences remain statistically significant after accounting for related firm- or plant-level characteristics (see studies cited in footnote 1). This evidence is also related to an important policy-oriented study by Moran (2001), who argues that MNE affiliates that are well integrated into the parent's network are likely to be better equipped to contribute to host economies than are affiliates which are isolated from the parent-controlled network by ownership restrictions or local content requirements. Moran's argument also suggests that productivity should be higher in MNEs with relatively large foreign ownership shares, but empirical evidence is often inconsistent with this latter hypothesis in Indonesia (Takii 2006), Thailand (Ramstetter 2006), or Vietnam (Ramstetter and Phan 2007, 2013), for example.

In other words, this evidence suggests that the level of foreign ownership is not positively related to productivity (or wages) but is much more strongly correlated with exporting. This in turn suggests that parent MNEs often restrict access of their minority-owned affiliates to exporting networks, more than they restrict access to technology-related firm-specific assets. Part of the reason may be that most MNE affiliates in Vietnam and other developing economies utilize relatively simple technologies which are useful in labor-intensive assembly activities. Correspondingly, the risk of leaking sophisticated technologies through minority-owned affiliates in developing economies is likely to be relatively small. On the other hand, the risks of minority-owned affiliates oversupplying specific markets may be large. This risk is also reflect by the fact that MNEs sometimes force local partners in their minority-owned

[4] It is also important to note that evidence of significant MNE-local wage differentials is stronger than corresponding evidence of productivity differentials (see (Nguyen 2015, Nguyen and Ramstetter 2015a). This evidence also indicates that MNE-local wage differentials were largest for a relatively few number of highly skilled workers (Nguyen and Ramstetter 2015b).

affiliates to sign agreements forbidding them from exporting the MNE's products.

Although the need to avoid oversupply is a key reason why MNEs may be motivated to insist on strong ownership control before allowing an affiliate to export, it is also true that developing economies, including several Southeast Asian economies in the 1980s and 1990s, reduced ownership restrictions and local content requirements for MNEs exporting large portions of their output. In these cases, strong correlations between foreign ownership shares and export propensities may also have resulted from policy biases as from MNE strategies. On the other hand, similar correlations have also been observed in Vietnam, despite the fact that formal foreign ownership restrictions have never been particularly strict after the promulgation of the first foreign investment law in 1988, soon after *Doi Moi*. Nonetheless, implementation and formal policy often diverged in Vietnam, with government officials effectively limiting foreign ownership shares in a number of cases, especially before the promulgation of the Enterprise Law in 2000. This implementation bias has weakened after the Law's subsequent implementation (Van Arkadie and Mallon 2003), reforms related to the implementation of the Bilateral Trade Agreement between Vietnam and the United States in 2001, the implementation of the ASEAN Free Trade Agreement in 2005, and further reforms related to Vietnam's WTO accession in early 2007.

3. Economy-wide Estimates of MNE Exports and Export Propensities

Unlike many developing economies, Vietnam has long compiled economy-wide estimates of economic activities by ownership. It is also important to remember that Vietnam remains a relative low-income developing economy (per capita GDP of US$1,907 in 2013), where predominantly rural households and self-employed workers continue to account for about one-third of GDP and over three-fourths of employment (General Statistics Office 2015, various years b). Correspondingly, MNEs accounted for only 3.9 percent of Vietnam's

employment in 2014, though this share increased markedly from under 1 percent in 2000-2001 (Table 1).[5] MNE shares of GDP were substantially larger, rising from 6.3 percent in 1995 to 14 percent in 2001 and 17 percent in 2008-2009 if old definitions are used. From 2010, Vietnam's national accounts changed somewhat because business taxes less production subsidies were separated from GDP of MNEs and other ownership groups. This reduced both the value and share of GDP produced by MNEs. Using the new definitions, the MNE share continued increasing in 2010-2014, from 15 to 18 percent.

The differences between MNE shares of production and employment reflect the fact that the average product of labor has tended to be several times higher in MNEs than in non-MNEs (Table 2). The U.S. dollar value of GDP per worker fell from over $11,000 in 2000-2002 to under $8,500 in 2003-2007, before increasing in most years thereafter to over $16,000 in 2013-2014. The decline in the mid-2000s probably reflected the declining importance of MNEs in the oil sector, in which labor productivity and capital intensity tend to be very high. Ratios of GDP per worker in MNEs to corresponding ratios in non-MNEs also declined markedly from over 14 in 2000-2002 to 6.7 in 2005, but stabilized at 4.9-6.4 in subsequent years. In other words, GDP per worker has remained about 5-fold higher, or more, in MNEs than in non-MNEs. As explained in the literature review, labor tends to be relatively productive in MNEs partially because MNEs possess intangible assets related to technology, management, and marketing in relatively large amounts. In Vietnam, MNEs also tend to be relatively large and capital intensive compared to non-MNEs, which also contributes to higher labor productivity in MNEs than in non-MNEs.

As pointed out in previous studies (Phan and Ramstetter 2004, 2009), MNE shares of Vietnam's exports have been much larger than shares of production or employment. MNE shares increased particularly rapidly in 1995 to 2000, from 27 to 47 percent (Table 1). After

[5] Households accounted for 32 percent of GDP in 2014 (General Statistics Office various years b), while households and the self-employed accounted for 77 percent of employment (General Statistics Office 2015).

fluctuating between 45 and 47 percent in 2001-2002, the MNE share increased to 55 percent in 2004 and stabilized at 53-58 percent in 2006-2011, before climbing to 63 percent or more in 2012-2014. In short, exports of MNEs have grown very rapidly, and accounted nearly two-thirds of total exports in recent years.

A separate series compiled from monthly statistical reports also shows that oil exports were a substantial portion of MNE exports in past years (Table 1). Correspondingly MNE shares of non-oil exports were substantially lower than shares of all exports in 2005 (45% vs. 57%). However, this difference became much smaller in recent years, even when oil prices and oil export values were relatively high (e.g, 60% vs. 63% in 2012 and 65% vs. 67% in 2013). In other words, non-oil exports, the vast majority of which are manufactures, have grown particularly rapidly and come to account for the vast majority of MNE exports.

Thus, export-production ratios or export propensities were much larger in MNEs than in non-MNEs. For example, after 1995, export-GDP ratios have always been larger than 1 in MNEs and increased to slightly over 2 in 2004-2007 and nearly 3 in 2012-2014. On the other hand, export-GDP differentials between MNEs and non-MNEs were relatively stable in 1995-2002 (4.7-5.8 times larger in MNEs), but increased markedly thereafter (to over 7 times larger in MNEs in 2005-2006 and 2011-2014). Both the MNE export-GDP ratio and ratio of export-GDP ratios in MNEs to non-MNEs were relatively low in 2008-2009, when the world financial crisis led to large declines in export demand that affected MNE exports more than non-MNE exports.

It is important to recognize that export-GDP ratios are less accurate measures of export propensities than export-sales or export-output ratios, for example, because they mix a measure including intermediate costs (exports) and another measure excluding them (GDP or

value added).[6] In addition, MNEs probably have substantially higher ratios of intermediate cost to sales or output because they are concentrated in processing industries like electronic-related machinery, apparel, and footwear. Thus, export propensity differentials between MNEs and non-MNEs are likely to be smaller than depicted in Table 1 if measured more precisely. Nonetheless, patterns and trends in export-sales or export-output ratios, on the one hand, and export-value added ratios on the other, are usually highly correlated. In other words, the fact that export-GDP ratios exceeded those in non-MNEs by 5-10 times is very strong evidence that mean export propensities have indeed been much higher in MNEs.

As mentioned above, manufactured exports have accounted for most of the growth of both MNE and non-MNE exports in recent years. For example, using a broad definition of manufacturing exports designed to be consistent with the Vietnam Standard Industrial Classification (VSIC), manufacturing exports increased from under $9 billion in 2000 to over $58 billion in 2010, and manufacturing's share of total exports increased from 61 to 81 percent (Table 3). The increase in the share of a narrower, often-used definition of manufacturing exports (the sum of Sections 5 to 8 of the Standard International Trade Classification [SITC]), which excludes many food- and resource-intensive products produced by manufacturing firms, was even more rapid, from 43 to 65 percent; and this share continued to increase rapidly to 76 percent in 2014. Typical labor-intensive manufactures (food, textiles, apparel, footwear, furniture, and other miscellaneous manufactures) were among the most important exports through 2010. However, by 2014, electronics-related machinery became by far the largest category, though exports of food, textiles, apparel, footwear, furniture, and miscellaneous manufactures also remained large.

[6] Export-GDP ratios often exceed 1 in small, open economies like Vietnam precisely because exports include associated intermediate costs, whereas GDP is value added is measured as gross output less intermediate costs.

4. Firm Exports in Recent Years

Recent surveys of Vietnamese enterprises for 2010-2013 have included questions the value of firm-level exports, which in principle should allow much more detailed examination of ownership-related differences in export propensities than previously possible. This section represents one of the first attempts to look at these data carefully, but our compilations of these data probably raise more questions than they answer. The questions are serious and confound any attempt to conduct more rigorous empirical analysis, at least for 2010 and 2013.

4a. Patterns and Trends in Firm Exports

The problems with the firm-level export data are especially obvious in compilations of export values. The most obvious and pervasive errors are in 2013, when exports reported by medium-large firms with 20 or more employees sum to $989 billion or almost 7.5 times the $132 billion in total merchandise exports reported in commodity trade data (see Table 1).[7] Because this large discrepancy is impossible to explain and we have been unable to clarify the source of the obvious and extremely large errors, we do not use the 2013 data in the following analysis. The $149 billion in firm exports reported for 2010 was also very large, more than twice the $72 billion total reported in the merchandise trade data (Table 4). However, as will be seen below, patterns observed in distributions of firms by export propensity were often similar to those in 2011-2012, so data for this year were retained for comparison. Small firms with 19 or fewer employees are excluded from these calculations primarily because most exporters and most MNEs are medium-large firms.[8]

[7] Exports of medium-large, wholesale trade firms amounted to $561 billion in 2013, while manufacturers reported exports of another $396 billion; both of these totals are several times larger the $132 billion in total merchandise exports.

[8] For example, medium-large firms accounted for 97.8 percent or more of exports by all firms and 99.3 percent or more of exports by manufacturing firms (authors' calculation). Correspondingly, comparisons of MNEs and non-MNEs are not very meaningful when samples include predominantly non-exporting, non-MNE, small firms. In addition, the enterprise surveys explicitly exclude organizations other than firms and household firms, and collect limited information from most small firms with 10 or fewer employees

Firm export totals were also larger than the merchandise total in 2011-2012 by 13 and 10 percent, respectively (Table 4). Double counting of merchandise exports passing through more than one firm or inclusion of service exports in firm exports are two potential causes of discrepancies between the firm-level and merchandise totals. It seems possible that the relatively small differentials in 2011-2012 might be related to these factors, but the firm questionnaires explicitly ask firms to report only merchandise export values. On these other hands, double counting and export sales of services are very unlikely to be large enough to explain the extremely large discrepancies observed in 2010, much less the huge discrepancy in 2013. Correspondingly, we think there are probably large errors for export values of some companies in these samples, and it is necessary to check the data firm by firm to find these errors. However, we have not yet been able to check for obvious errors in the firm-level time series on exports, or for other obvious outliers (e.g., firms with unusually high or low export propensities, sales per worker, fixed assets per worker, or sales-fixed asset ratios).

Similarly, the firm data on export values in Table 4 also imply unrealistically large annual changes in export values. For 2011 and 2012, the firm data imply much lower growth rates of merchandise exports than the merchandise export data in Table 1 (-27% vs. 41% and 15% vs. 31%, respectively). The growth rate of manufacturing firm exports was similar to total merchandise export growth in 2012 (28%), but again much lower in 2011 (-36%). Among the 17 specific manufacturing industries identified in Table 4, very large fluctuations in annual export growth rates were also common. For example, exports doubled or were halved in eight industries in 2011 and nine in 2012. This suggests there are severe data errors at the firm level in several industries.

The firm export data (Table 5) suggest that the share of MNEs, including both wholly foreign MNEs (WFs) and MNE joint ventures (JVs), was substantially larger than the

(Jammal et al, 2006) and our previous compilations indicate that most firms reporting unrealistic or highly unusual data are small firms.

corresponding share of merchandise exports (Table 1) in 2010 (73% vs. 54%) and 2012 (72% vs. 63%), but similar in 2011 (56% vs. 57%). WFs accounted for the majority of exports in all years (59-60% in 2010 and 2012, and 54% in 2011). WF shares were larger in manufacturing, around two-thirds. WF shares were conspicuously large (90% or more) in the computer and electronic machinery industry in all years, which has become the source of large exports in recent years. In other large export industries, WF shares were conspicuously low in food products and similar to shares of overall manufacturing in textiles, apparel, and leather and footwear, for example.

Private firms were the second largest source of firm exports in most years, accounting for about one-fifth of exports in 2011-2012 and about one-sixth in 2010 (Table 5). Private firm shares of manufacturing firm exports were slightly smaller, reflecting relatively large shares in wholesale trade, which increased to over one-half in 2012. Private shares were also conspicuously large in food product manufacturing. Private shares of exports in other important manufacturing industries such as textiles, apparel, rubber and plastics were relatively large in some years, but small in others.

There were large fluctuations in the shares of state-owned enterprises (SOEs) and MNE joint ventures (JVs) that mirrored each other. In 2010 and 2012, JV shares of firm exports were larger than SOE shares, 13 vs. 8-11 percent, but in 2011, SOE shares were much larger 23 vs. 2 percent (Table 5). Here it is important to realize that many MNE JVs involve SOE partners. Correspondingly, it seems likely that some of the larger exporting firms were classified as SOEs in 2011 but as JVs in 2010 and 2012, which would explain some of these mirroring trends. SOE shares were large in wholesale trade but decreased from three-fourths in 2010 to less than half in 2011-2012, while private firm exports were negligible in this industry. In manufacturing, SOE were smaller than JV shares 2010 and 2012, 2 vs. 11-15 percent, but larger in 2011, 14 vs. 3 percent. SOE and JV shares were both relatively large in

most years in other transportation machinery.

4b. Patterns and Trends in Distributions of Exporting Firms

The data on export values reveal several patterns and trends that are difficult to explain or reconcile with alternative information (Tables 1, 4, 5). On the other hand, data on the number of medium-large exporting firms reveal patterns that appear more realistic and more consistent with other sources in important respects (Table 4).[9] Having said that, there are no alternative sources to cross check the firm data and the firm data suggest a much larger increases in exporting firms in 2011 (26% overall, 17% in manufacturing) than in 2012 subsequent years (-1% and 2%, respectively), which is probably incorrect and difficult to reconcile with trends in the growth of merchandise exports noted above.

On the other hand, these data are consistent with expectations and data from other Southeast Asian economies suggest that firms exporting large proportions (90% or more) of their output consistently accounted for relatively large shares of MNEs with large foreign ownership shares. For example, these "large exporters" accounted for about one-third or more (32-36%) of all WFs and even larger shares of manufacturing WFs (38-40%, Table 6). Particularly large shares were observed in apparel (55-57%), leather and footwear (59-62%), computers and electronic machinery (50-52%), and furniture (55-62%). Firms with high export propensities also accounted for relatively large shares of MNE JVs (9-12% in all industries, 14-23% in manufacturing), but much smaller shares of SOEs or private firms (1-2% in all industries; 4-6% in manufacturing). If one examines the manufacturing industry-level data, several fluctuations in these shares are difficult to explain. They often occur in industries with relatively small samples of SOEs and JVs, and in industries where there were

[9] Medium-large exporters were the vast majority of all exporting firms in manufacturing (90% in 2010 and 2012 and 94% in 2011 and 2012) and mining (93-95% in 2011-2013), but smaller proportions in agriculture (80-90%), wholesale trade (66% in 2010 and 2012, 32-41% in 2011 and 2013), and other industries (56% in 2011 and 2013, 72-75% in 2010 and 2013; authors' calculations).

fewer than 20 medium-large SOEs or JVs in the samples.[10]

The important point here is that shares of firms with very large export propensities tended to account for the largest shares of WFs, followed by JVs. In other words, even in recent Vietnam, where exporting MNEs benefit from relatively few policy incentives, there is a strong tendency for firms with relatively high foreign ownership shares to have high export propensities. The lack of policy bias in Vietnam suggests that this pattern results mainly from MNE strategy.

A similar, though less pronounced pattern is also observed among the relatively few firms that export half or more of their turnover, but less than 90 percent (Table 7). These firms with moderate export propensities accounted for a little over one-tenth of WFs (10-13% in all industries, 12-14% in manufacturing) and somewhat smaller shares of JVs (4-8% in all industries, 9-10% in manufacturing). However, here again, corresponding shares of local SOEs and private firms were much smaller (1-3% in all industries, 4-5% in manufacturing). Thus, even moderate exporters constitute larger shares of WFs and JVs than of local SOEs and private firms.

The reverse pattern is also observed when shares of non-exporters are examined (Table 8). In other words, non-exporters accounted for the majority of local private firms (93% in all industries, 79-83% in manufacturing) and local SOEs (81-88% in all industries, 67-69% in manufacturing), but much smaller shares of JVs (55-67% in all industries, 33-41% in manufacturing, and a minority of WFs (29-37% in all industries, 24-26% in manufacturing).[11] Thus, when shares of firms exporting more than half of their turnover or firms that don't export are examined, there appears a very strong correlation between a firm's foreign

[10] On the other hand, the smallest industry-level samples were 42 for WFs and 72 for private firms.

[11] Shares of firms exporting less than half of their output (not shown) do not reveal a high correlation with foreign ownership shares (20-21 percent of WFs in all industries, 21-24 percent in manufacturing, 15-26 and 31-34 percent of JVs, respectively, 9-14 and 20-24 percent of SOEs, respectively, and 3-4 and 8-10 percent of private firms, respectively.

ownership share and its export propensity. In other words, WFs, which account for the vast majority of MNEs in Vietnam, tend to have relatively high export propensities and account for the vast majority of MNE exports, and probably well over half of Vietnam's total exports in recent years.

5. Conclusion

This paper has examined the role of foreign multinational enterprises (MNEs) have played in Vietnam's exports in 1995-2014 Economy-wide estimates suggest MNE share of Vietnam's merchandise exports grew from about one quarter to about two-thirds during this period. MNE shares of GDP were much smaller (6% to 18%); correspondingly export-production ratios were much (4.7 to 9.6 times) higher in MNEs than in non-MNEs. If households and self-employed workers are included MNE shares of GDP were also much larger than shares of employment. (0.9% to 3.9% in 2000-2014). Thus, average labor productivity was also much higher in MNEs than in non-MNEs.

Data on enterprises with 20 or more employees, wholly-foreign MNEs (WFs), which account for the vast majority of MNEs in Vietnam, accounted for 54-60 percent of firm exports in 2010-2012, while local private firms accounted for another 16-21 percent. Shares of MNE joint ventures (JVs) and state-owned enterprises (SOEs) fluctuated wildly with JV shares being relatively high in 2010 and 2012, but low in 2011, while the reverse was true for SOEs. The firm data also tell a familiar story suggesting a strong correlation between foreign ownership shares and export propensities. For example, 32-36 percent of WFs exported 90 percent of more of their turnover, but only 9-12 percent of JVs and 1-2 percent each of SOEs and private firms had similarly high export propensities. In contrast, 93 percent of private firms and 81-87 percent of private firms exported nothing, while only 55-69 percent of JVs and 29-36 percent of WFs were non-exporters. The correlation between foreign ownership

shares is important, partially because policy biases in favor of exporting MNEs have not been pronounced in Vietnam.

Export propensities vary substantially among industries and it is important to extend the analysis to examine whether ownership-related differences in propensities were statistically significant after accounting for variation in related industry- and firm-level characteristics. However, these efforts will be confounded by some serious problems encountered when compiling export data from the enterprise census/surveys. For example, these compilations suggest that some large exporters were classified as SOEs in 2011 but as JVs in other years. Perhaps more importantly, total firm exports were more than two times larger than estimates of Vietnam's exports from merchandise trade data in 2010 and seven times larger in 2013, indicating some very large errors in the firm data for these years. It is thus very important to check the firm-level data carefully and adjust or data for firms reporting clearly unrealistic values before conducting rigorous analyses with the data or drawing definitive conclusions from the patterns they reveal.

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Table 1: Employment, GDP, and Exports in Foreign MNEs & MNE shares of Vietnam's economy

	Annual Data						Cumulative Monthly Data			
	Employees		GDP		Exports		Exports		Non-oil exports	
Year	millions	% share	US$bil	% share	US$bil	% share	US$bil	% share	US$bil	% share
1995	-	-	1.307	6.30	1.473	27.03	-	-	-	-
1996	-	-	1.822	7.39	2.155	29.70	-	-	-	-
1997	-	-	2.435	9.07	3.213	34.98	-	-	-	-
1998	-	-	2.729	10.03	3.215	34.35	-	-	-	-
1999	-	-	3.511	12.24	4.682	40.57	-	-	-	-
2000	0.359	0.97	4.138	13.27	6.810	47.02	-	-	-	-
2001	0.349	0.91	4.497	13.76	6.798	45.23	-	-	-	-
2002	0.426	1.08	4.823	13.76	7.872	47.12	-	-	-	-
2003	0.753	1.86	5.722	14.47	10.161	50.43	-	-	-	-
2004	0.915	2.20	6.875	15.13	14.488	54.70	-	-	-	-
2005	1.113	2.60	8.738	15.16	18.554	57.18	18.517	57.45	11.130	44.80
2006	1.322	3.01	10.666	16.07	23.061	57.90	22.865	57.73	14.542	46.49
2007	1.562	3.46	13.130	16.96	27.775	57.19	27.832	57.52	19.355	48.50
2008	1.694	3.65	17.274	17.43	34.523	55.07	34.905	55.49	24.455	46.62
2009	1.525	3.19	18.357	17.32	30.372	53.19	29.854	52.76	23.644	46.94
2010	1.727	3.52	17.567	15.15	39.152	54.20	38.828	54.21	33.884	50.81
2011	1.700	3.38	21.228	15.66	55.124	56.88	55.114	56.87	47.873	53.39
2012	1.703	3.31	24.986	16.04	72.252	63.09	72.274	63.08	64.045	60.22
2013	1.786	3.42	29.733	17.37	88.150	66.76	88.190	66.74	80.913	64.80
2014	2.057	3.90	33.305	17.89	93.956	62.55	101.218	67.40	93.989	65.75

Notes and sources: Annual data from General Statistics Office (various years b); GDP data in current prices, where 2010-2015 is from a 2010 base series excluding products taxes less subsidies on production, 2005-2009 is from a 2010 base series including products taxes less subsidies, and 1995-2004 is from a 1994 base series including products taxes less subsidies; cumulative monthly export data from General Statistics Office (various years c); MNE shares of crude exports were 100 percent in 2005-2014.

Table 2: GDP per employee and Export-GDP ratios in MNEs and non-MNEs

	GDP/employee			Export/GDP ratio		
Year	MNE US$	non-MNE US$	MNE/ nonMNE	MNE ratio	non-MNE ratio	MNE/ nonMNE
1995	-	-	-	1.127	0.205	5.51
1996	-	-	-	1.182	0.223	5.29
1997	-	-	-	1.319	0.245	5.39
1998	-	-	-	1.178	0.251	4.69
1999	-	-	-	1.333	0.272	4.89
2000	11,543	736	15.68	1.646	0.284	5.80
2001	12,880	745	17.29	1.512	0.292	5.18
2002	11,325	778	14.55	1.632	0.292	5.59
2003	7,596	853	8.90	1.776	0.295	6.01
2004	7,515	948	7.93	2.107	0.311	6.77
2005	7,852	1,174	6.69	2.123	0.284	7.47
2006	8,068	1,306	6.18	2.162	0.301	7.18
2007	8,405	1,473	5.71	2.115	0.323	6.54
2008	10,195	1,829	5.58	1.999	0.344	5.81
2009	12,041	1,897	6.35	1.655	0.305	5.43
2010	10,175	2,079	4.89	2.229	0.336	6.63
2011	12,487	2,350	5.31	2.597	0.366	7.10
2012	14,669	2,631	5.57	2.892	0.323	8.95
2013	16,651	2,806	5.93	2.965	0.310	9.56
2014	16,194	3,016	5.37	2.821	0.368	7.67

Notes and sources: see Table 1.

Table 3: Commodity Exports by SITC and VSIC

Commodity or industry, code	2000	2005	2010	2011	2012	2014
By SITC rev 3, total	14,483	32,447	72,237	96,906	114,529	150,217
Manufactures, excluding food, etc., 5-8	6,193	16,221	46,666	62,664	78,978	114,057
Textiles, 65	299	725	3,061	3,770	3,894	5,330
Apparel, 84	1,821	4,681	10,390	13,149	14,443	20,174
Leather & Footwear, 61, 85	1,481	3,121	5,489	6,987	7,793	11,093
Wood manufactures, 63	93	112	247	312	390	655
Paper manufactures, 64	59	121	372	418	503	546
Plastics & Rubber, 57-58, 62	46	290	1,214	1,456	1,893	1,988
Non-metallic mineral products, 66	172	347	936	1,247	1,816	2,869
Metals & metal products, 67-69	120	665	2,738	3,854	4,202	5,634
Electronic & electric machinery 75-77,87-88	1,064	2,373	9,309	15,857	27,795	45,101
Non-electric machinery, 71-74	135	498	1,698	2,352	2,871	3,299
Road vehicles, 78	74	356	721	969	1,304	1,902
Other transportation machinery, 79	26	25	531	808	1,082	1,250
Furniture, bedding, etc., 82	232	1,401	2,960	3,140	3,640	4,712
Miscellaneous manufactures, 89	281	765	4,636	4,793	2,930	3,670
Other manufactures	291	742	2,363	3,550	4,421	5,834
Food, beverages, tobacco, 0-1	3,554	6,483	13,729	17,701	19,173	21,966
Mineral fuels, 3	3,825	8,358	7,980	11,008	11,353	9,238
Others, 2, 4, 9	912	1,385	3,862	5,533	5,024	4,956
By VSIC93 (≈ISIC rev 3), total	14,483	32,447	72,237	-	-	-
Manufactures, D	8,831	21,211	58,384	-	-	-
Food, beverages, tobacco, 15-16	2,391	4,558	10,029	-	-	-
Textiles, 17	409	1,318	5,249	-	-	-
Apparel, 18	1,696	4,074	7,941	-	-	-
Leather & footwear, 19	1,647	3,437	6,285	-	-	-
Wood products, 20	180	397	982	-	-	-
Paper products, 21	37	108	267	-	-	-
Plastics & rubber, 25	125	511	1,974	-	-	-
Non-metallic mineral products, 26	145	346	975	-	-	-
Metals & metal products, 27-28	120	667	2,846	-	-	-
Electronic & electric machinery, 30-33	1,101	2,551	10,014	-	-	-
Non-electric machinery, 29	100	306	988	-	-	-
Motor vehicles, 34	5	174	536	-	-	-
Other transportation machinery, 35	96	242	794	-	-	-
Furniture, miscellaneous manufacturing, 36	400	1,721	6,452	-	-	-
Other manufacturing	380	801	3,051	-	-	-
Agriculture, Fishery, Forestry, A-B	1,542	2,912	6,545	-	-	-
Mining & quarrying, C	3,628	8,171	6,825	-	-	-
Others	481	154	483	-	-	-

Sources: General Statistics Office (various years a), United Nations COMTRADE (2016).

Table 4: Exports and Exporting Firms with 20 or more Employees

	Values (US$ millions)			Firms (number)		
Variable, industry, VSIC07 code	2010	2011	2012	2010	2011	2012
All industries	149,473	109,813	126,159	6,020	7,613	7,523
-ratio to merchandise exports	2.07	1.13	1.10	-	-	-
Manufacturing, 10-33	131,136	83,417	107,127	5,426	6,338	6,494
Food products, 10	11,097	8,838	9,165	726	859	897
Textiles, 13	4,835	4,569	4,190	322	349	372
Apparel, 14	23,445	8,626	9,411	818	983	1,014
Leather & footwear, 15	5,221	5,647	8,178	288	341	368
Wood products, 16	18,329	10,490	1,256	292	335	308
Paper products, 17	3,989	449	2,661	160	178	187
Rubber & plastics, 22	2,159	3,111	7,653	469	559	559
Non-metallic mineral products, 23	33,905	983	1,285	213	241	257
Basic metals, 24	2,314	997	1,991	70	97	115
Metal products, 25	2,268	7,913	2,934	405	459	465
Computers, electronic machinery, 26	7,010	10,279	22,185	169	192	212
Electric machinery, 27	2,503	9,604	2,946	173	184	196
Non-electric machinery, 28	772	991	974	83	110	118
Motor vehicles, 29	725	4,163	11,612	92	108	125
Other transportation machinery, 30	1,361	1,089	1,619	91	99	104
Furniture, 31	8,116	2,390	11,633	491	562	518
Other manufacturing, 11-12, 18-21, 32-33	3,087	3,276	7,434	564	682	679
Agriculture, 1-3	0	683	536	0	71	64
Mining, 5-9	0	2,247	8,420	0	65	63
Wholesale trade, 45+46	18,133	22,825	8,363	496	876	631
Other industries	204	641	1,713	98	263	271

Sources: Authors' compilation from firm-level data supplied by General Statistics Office.

Table 5: Ownership Group Shares of Exports by Firms with 20 or more Employees
(% of exports by industry)

Industry; VSIC07 codes in Table 4	2010	2011	2012	2010	2011	2012
	WFs			JVs		
All industries	59.60	54.27	58.68	13.41	2.07	13.37
Manufacturing	67.83	64.72	68.41	15.27	2.65	10.54
Food products	12.39	18.81	20.69	1.34	2.17	1.91
Textiles	46.17	80.16	73.77	10.18	4.04	1.42
Apparel	88.70	52.27	69.79	1.67	1.85	2.27
Leather & footwear	75.79	76.33	69.40	3.42	3.26	2.45
Wood products	1.48	1.30	17.64	95.20	1.47	11.82
Paper products	95.45	76.12	75.69	0.04	2.24	0.88
Rubber & plastics	75.55	66.33	48.22	3.96	3.69	3.20
Non-metallic mineral products	97.61	38.97	56.63	0.15	13.63	11.68
Basic metals	54.08	58.17	76.01	0.54	7.42	4.49
Metal products	86.27	94.84	79.11	5.16	0.28	4.93
Computers, electronic machinery	98.69	99.40	98.75	0.80	0.28	1.08
Electric machinery	86.81	96.62	90.71	9.60	2.41	6.26
Non-electric machinery	91.53	90.32	91.71	0.91	2.55	0.75
Motor vehicles	87.91	96.96	25.96	11.83	2.44	73.74
Other transportation machinery	42.62	38.35	54.34	28.23	39.10	38.32
Furniture	65.69	64.17	92.22	0.63	2.97	0.79
Other manufacturing	72.37	74.82	73.65	8.96	2.98	1.85
Agriculture	-	5.70	8.83	-	0.58	0.77
Mining	-	3.78	0.88	-	1.88	65.98
Wholesale trade	0.63	23.77	5.89	0.04	0.02	0.03
Other industries	6.43	9.30	7.08	7.37	2.43	0.56
	SOEs			Private Firms		
All industries	10.59	22.69	7.88	16.40	20.97	20.07
Manufacturing	1.64	13.78	1.74	15.26	18.85	19.31
Food products	3.88	5.28	6.81	82.38	73.74	70.59
Textiles	3.24	3.68	4.26	40.41	12.12	20.55
Apparel	1.00	2.96	1.67	8.64	42.92	26.27
Leather & footwear	1.28	1.22	0.78	19.51	19.19	27.36
Wood products	0.17	92.24	1.58	3.14	4.99	68.95
Paper products	0.12	1.26	0.13	4.39	20.38	23.29
Rubber & plastics	3.46	2.96	1.23	17.04	27.02	47.35
Non-metallic mineral products	0.08	7.16	7.68	2.16	40.24	24.01
Basic metals	24.26	0.67	0.38	21.12	33.74	19.12
Metal products	1.87	0.42	1.50	6.70	4.46	14.46
Computers, electronic machinery	0.15	0.12	0.06	0.37	0.20	0.10
Electric machinery	1.63	0.26	0.87	1.96	0.71	2.16
Non-electric machinery	1.47	1.33	1.45	6.10	5.80	6.08
Motor vehicles	0.21	0.04	0.02	0.06	0.56	0.28
Other transportation machinery	14.81	22.36	7.06	14.34	0.19	0.27
Furniture	0.12	0.58	0.18	33.57	32.28	6.81
Other manufacturing	7.82	10.45	5.05	10.85	11.75	19.44
Agriculture	-	91.84	88.13	-	1.88	2.27
Mining	-	90.62	31.99	-	3.72	1.15
Wholesale trade	75.14	45.63	43.02	24.19	30.58	51.07
Other industries	30.34	53.12	77.23	55.86	35.15	15.14

Sources: Authors' compilation from firm-level data supplied by General Statistics Office.

Table 6: Shares of Firms with 20 or more Employees Exporting 90%+ of Turnover
(% of all firms in each ownerhip-industry group)

Industry; VSIC07 codes in Table 4	2010	2011	2012	2010	2011	2012
	WFs			JVs		
All industries	36.33	32.98	32.49	10.71	9.44	11.69
Manufacturing	38.26	39.89	39.40	14.39	19.54	23.08
Food products	26.89	25.76	30.58	10.53	12.73	23.64
Textiles	24.67	25.47	29.30	5.56	12.50	11.76
Apparel	55.24	55.73	57.44	40.54	55.88	55.56
Leather & footwear	61.65	62.45	58.98	50.00	77.78	70.00
Wood products	45.59	38.16	37.35	57.14	52.63	52.94
Paper products	22.86	24.79	24.58	0.00	25.00	50.00
Rubber & plastics	34.65	39.85	34.32	12.50	23.08	26.09
Non-metallic mineral products	29.27	26.83	26.80	0.00	3.13	12.50
Basic metals	28.57	24.14	27.14	0.00	16.67	5.00
Metal products	25.94	31.03	32.17	6.38	7.69	20.51
Computers, electronic machinery	50.00	51.66	49.79	0.00	0.00	18.18
Electric machinery	37.50	36.88	37.72	7.69	0.00	8.33
Non-electric machinery	35.82	40.96	33.00	12.50	16.67	0.00
Motor vehicles	19.64	32.06	29.63	0.00	6.67	10.00
Other transportation machinery	17.17	14.89	15.46	6.25	0.00	7.14
Furniture	61.93	58.74	55.25	42.86	60.00	69.23
Other manufacturing	33.20	34.95	34.09	6.56	9.84	5.97
Agriculture	-	19.23	13.21	-	12.50	14.29
Mining	-	37.50	37.50	-	6.67	30.77
Wholesale trade	7.23	6.47	4.91	3.33	0.00	0.00
Other industries	1.57	2.85	3.97	0.00	0.71	1.41
	SOEs			Private Firms		
All industries	2.36	1.36	1.24	2.00	1.78	1.69
Manufacturing	4.71	4.68	3.93	4.88	5.52	5.47
Food products	6.76	10.67	7.14	6.61	8.68	8.35
Textiles	3.45	0.00	10.71	4.93	3.24	4.91
Apparel	35.29	37.93	28.57	13.15	14.78	13.73
Leather & footwear	20.00	27.27	28.57	11.75	14.48	13.85
Wood products	4.55	5.26	5.88	6.90	7.94	7.34
Paper products	0.00	0.00	0.00	2.02	1.43	1.93
Rubber & plastics	5.26	4.55	4.55	1.87	2.53	2.79
Non-metallic mineral products	0.00	0.00	0.00	2.18	1.56	1.68
Basic metals	4.55	0.00	0.00	0.25	0.72	1.92
Metal products	0.00	0.00	0.00	0.83	1.27	0.57
Computers, electronic machinery	11.11	12.50	20.00	1.23	3.09	2.73
Electric machinery	0.00	0.00	0.00	0.38	1.01	0.66
Non-electric machinery	0.00	0.00	0.00	1.59	0.93	0.98
Motor vehicles	0.00	0.00	0.00	0.00	0.00	0.00
Other transportation machinery	6.98	9.38	5.41	0.47	0.00	0.00
Furniture	9.09	0.00	0.00	10.18	11.83	10.96
Other manufacturing	1.21	0.00	0.00	1.31	1.42	2.21
Agriculture	-	0.27	0.00	-	0.05	0.00
Mining	-	4.05	5.06	-	1.26	1.38
Wholesale trade	2.65	1.58	1.53	0.66	1.21	0.77
Other industries	0.00	0.07	0.14	0.03	0.05	0.06

Sources: Authors' compilation from firm-level data supplied by General Statistics Office.

Table 7: Shares of Firms with 20 or more Employees Exporting 50-89% of Turnover
(% of All Firms in Each Ownerhip Group)

Industry; VSIC07 codes in Table 4	2010	2011	2012	2010	2011	2012
	WFs			JVs		
All industries	14.11	10.69	10.63	8.53	5.06	4.51
Manufacturing	14.81	12.82	12.84	11.17	9.90	9.74
Food products	11.32	16.16	10.74	7.02	10.91	9.09
Textiles	22.47	19.10	18.36	16.67	12.50	23.53
Apparel	12.76	11.83	12.78	24.32	8.82	5.56
Leather & footwear	12.62	8.44	10.55	10.00	0.00	10.00
Wood products	14.71	17.11	9.64	14.29	5.26	5.88
Paper products	14.29	14.53	14.41	0.00	0.00	0.00
Rubber & plastics	16.80	12.28	14.81	16.67	7.69	21.74
Non-metallic mineral products	10.98	10.98	10.31	9.68	9.38	6.25
Basic metals	9.52	13.79	14.29	15.00	22.22	5.00
Metal products	15.37	14.78	13.05	8.51	5.13	7.69
Computers, electronic machinery	19.32	11.37	13.50	8.33	22.22	27.27
Electric machinery	20.83	17.50	20.36	15.38	28.57	25.00
Non-electric machinery	14.93	4.82	13.00	0.00	16.67	20.00
Motor vehicles	15.18	9.16	11.11	8.33	0.00	0.00
Other transportation machinery	10.10	12.77	9.28	6.25	6.25	7.14
Furniture	15.60	13.45	12.33	21.43	26.67	7.69
Other manufacturing	12.22	10.29	9.66	4.92	4.92	5.97
Agriculture	-	3.85	9.43	-	0.00	0.00
Mining	-	25.00	0.00	-	0.00	0.00
Wholesale trade	2.41	3.60	1.84	3.33	3.23	3.57
Other industries	2.36	1.22	1.28	0.85	0.95	0.00
	SOEs			Private Firms		
All industries	2.85	1.89	2.05	1.79	1.52	1.40
Manufacturing	5.65	5.18	5.24	4.19	4.60	4.37
Food products	18.92	13.33	20.00	9.99	10.00	9.36
Textiles	24.14	23.08	10.71	4.03	5.49	4.49
Apparel	14.71	17.24	14.29	5.42	5.72	6.53
Leather & footwear	30.00	9.09	0.00	7.14	5.12	6.71
Wood products	9.09	0.00	0.00	4.99	6.66	4.86
Paper products	0.00	0.00	0.00	2.15	2.21	2.31
Rubber & plastics	0.00	4.55	0.00	3.30	4.15	4.59
Non-metallic mineral products	0.00	0.00	0.00	1.69	1.99	1.57
Basic metals	0.00	0.00	0.00	0.49	0.72	0.72
Metal products	4.65	5.41	5.26	0.62	0.83	0.63
Computers, electronic machinery	0.00	0.00	0.00	2.47	2.06	4.55
Electric machinery	0.00	0.00	0.00	1.14	0.34	1.32
Non-electric machinery	0.00	0.00	0.00	1.91	3.70	2.95
Motor vehicles	0.00	0.00	0.00	0.00	1.39	1.15
Other transportation machinery	4.65	9.38	8.11	0.47	0.65	0.00
Furniture	0.00	12.50	28.57	9.86	10.49	9.50
Other manufacturing	0.61	1.14	2.12	1.10	1.85	1.45
Agriculture	-	2.14	2.49	-	0.09	0.14
Mining	-	0.00	1.27	-	0.94	0.81
Wholesale trade	2.65	4.11	3.99	0.83	1.16	0.80
Other industries	0.30	0.07	0.21	0.06	0.06	0.08

Sources: Authors' compilation from firm-level data supplied by General Statistics Office.

Table 8: Shares of Non-exporting Firms with 20 or more Employees
(% of All Firms in Each Ownerhip Group)

Industry; VSIC07 codes in Table 4	2010	2011	2012	2010	2011	2012
	WFs			JVs		
All industries	29.05	36.11	36.32	54.99	68.47	68.63
Manufacturing	25.70	24.05	23.82	41.44	36.29	36.15
Food products	40.09	33.19	34.71	47.37	40.00	30.91
Textiles	28.19	30.71	28.52	33.33	43.75	29.41
Apparel	23.81	20.97	17.51	27.03	23.53	27.78
Leather & footwear	18.45	14.35	17.58	30.00	11.11	10.00
Wood products	17.65	26.32	31.33	14.29	31.58	11.76
Paper products	25.71	28.21	26.27	0.00	25.00	0.00
Rubber & plastics	22.57	19.05	21.23	33.33	26.92	21.74
Non-metallic mineral products	43.90	43.90	39.18	61.29	53.13	53.13
Basic metals	26.19	25.86	24.29	55.00	44.44	60.00
Metal products	31.99	27.34	27.74	40.43	48.72	38.46
Computers, electronic machinery	17.61	18.01	23.21	41.67	22.22	18.18
Electric machinery	19.44	23.13	12.57	38.46	42.86	50.00
Non-electric machinery	31.34	36.14	33.00	50.00	25.00	50.00
Motor vehicles	28.57	29.01	22.96	58.33	53.33	50.00
Other transportation machinery	35.35	29.79	25.77	43.75	18.75	21.43
Furniture	11.47	10.31	12.79	21.43	13.33	15.38
Other manufacturing	26.48	25.44	27.08	49.18	37.70	50.75
Agriculture	-	53.85	62.26	-	62.50	71.43
Mining	-	12.50	50.00	-	80.00	61.54
Wholesale trade	73.49	67.63	73.01	76.67	80.65	89.29
Other industries	92.91	92.13	91.03	95.76	97.39	97.18
	SOEs			Private Firms		
All industries	80.69	87.42	86.79	92.55	92.82	93.49
Manufacturing	68.92	68.06	67.27	83.39	80.32	80.74
Food products	47.30	49.33	44.29	72.42	68.87	69.62
Textiles	37.93	46.15	53.57	80.75	80.14	77.00
Apparel	35.29	41.38	42.86	75.61	70.26	71.81
Leather & footwear	30.00	54.55	28.57	75.58	72.16	69.05
Wood products	63.64	68.42	52.94	80.94	76.28	79.84
Paper products	62.50	64.29	80.00	90.04	88.80	88.05
Rubber & plastics	68.42	54.55	54.55	83.30	79.07	78.84
Non-metallic mineral products	86.32	82.43	81.08	91.42	91.02	90.85
Basic metals	77.27	90.00	79.17	93.86	89.95	88.25
Metal products	81.40	70.27	71.05	93.19	91.54	92.41
Computers, electronic machinery	77.78	75.00	70.00	81.48	89.69	83.64
Electric machinery	62.50	50.00	53.85	83.71	84.56	87.46
Non-electric machinery	83.33	93.33	68.75	90.13	85.49	86.56
Motor vehicles	82.35	83.33	75.00	94.59	93.06	86.21
Other transportation machinery	86.05	65.63	78.38	94.42	94.19	91.61
Furniture	54.55	0.00	14.29	70.41	64.92	67.64
Other manufacturing	74.55	78.41	76.72	91.05	86.30	87.38
Agriculture	-	91.42	91.16	-	99.44	99.53
Mining	-	91.89	87.34	-	94.87	94.94
Wholesale trade	69.91	69.94	70.86	95.25	92.26	95.03
Other industries	97.19	98.05	97.51	99.58	99.39	99.46

Sources: Authors' compilation from firm-level data supplied by General Statistics Office.