Discussion Paper No. 2015-67
(Arvanitis/Hollenstein/Stucki)

We would like to thank the three referees for their comments. Their suggestions enabled us to significantly improve the paper.

Reply to the three referees (R1, R2, R3)

Referee 1 (R1)

Major points

R1 suggested to streamlining the introduction (*p.1, first part of point 1*). Accordingly, we proceeded in Section 1 more directly to the paragraph where we state our contribution to the topic treated in the paper. We did so mainly by concentrating the discussion of the literature on the few papers that explicitly contrast manufacturing and services (i.e. studies dealing only with services are not treated any more or are referred to only in a footnote).

R1 rightly asserted that we use firm-level data to measure L-advantages, whereas many studies use country data (*p.1, second part of point 1*). Indeed, country data are necessary to deal with the determinants of *where* FDI are located. However, our paper does not aim at explaining location choices but it deals with the process of internationalisation of firm activities in general, that is, it explains *why* a firm chooses to remain at home, to export or to invest abroad (FDI). In this context, we do not need to refer to country data. We rather use firm-level measures of L-advantages of foreign locations as a whole (i.e. not differentiated by country) as compared to Switzerland to explain why a firm chooses an FDI rather than an export strategy as a means to go international (foreign L-advantages are a precondition for a direct presence abroad).

In discussing the literature we mention in Section 1, as suggested by R1, that the paper goes beyond the only firm-level study for Switzerland, which uses a similar approach but only for the entire business sector (Hollenstein (2005).

In Section 2.2, we simplified the formulation of the various hypotheses according to the suggestions of R1 (*p.1, point 3*), with one exception: we did not drop H1 which deals with the effect of the OLI variables on the internationalisation of firms *in general*, i.e. irrespective of differences between sectors. We think that the results for the entire business sector are a good starting point and may serve as reference for the subsequent analysis of the hypotheses dealing with differences between manufacturing and services.

According to R1 (*p.1, point 2*), the arguments leading up to H2 and H4 (differences between manufacturing and services) as well as those concerning H3 (differences between the two combinations of business functions) are too short. Therefore, we somewhat extended the text leading up to the various hypotheses presented in subsection 2.2. With respect to *hypothesis H2* (model I) we mainly provide three arguments: a) the high heterogeneity of the service sector (as it is asserted by many scholars), b) the higher importance of soft factors as determinants of foreign activity in services as opposed to technology-related determinants in manufacturing (an argument that is accepted by referee 2), and c) the higher relevance of idiosyncratic and situation-specific factors in services (as emphasised in the international business (IB) literature). With respect to the differences between the two business functions (model II) in the entire

business sector (*hypothesis H3*) we basically argue, as we already did in the first version of the paper, that the relevance of the OLI variables increases with an increasing complexity of an FDI strategy because a highly complex strategy is more costly than a less demanding one; the higher costs of a complex strategy have to be compensated for by larger OLI-advantages. This argument is in line with some other studies (although they use a somewhat different approach; see, e.g., Basile et al., 2003). More specifically, in model II the OLI variables should be correlated more strongly with the FDI strategy *including* foreign R&D (FDI_RDP) than with a FDI strategy *excluding* R&D (reference strategy FDI_DP). To explain the differences between manufacturing and services with regard to the two business functions (*hypothesis H4*) we emphasise the same three aspects that we put forward in the case of model I (H2): large heterogeneity of the services sector; high importance of soft factors in services vs. high relevance of technology-related variables in manufacturing; higher relevance of idiosyncratic and situation-specific factors in services. More specifically, we expect that technology-related variables are the most important factors for explaining why the OLI model is more strongly related to manufacturing than to services in comparing the two (combinations of) business functions.

Minor points

Minor comments made by R1 on *page 1*: Additional estimates (not shown in the paper) based on an alternative specification of the size variable suggested by R1 in *point 6* (log of the number of employees) did not change the results. The same holds for *point 5*: using subsets of L-variables did not substantially influence the basic results with respect to the impact of the L-advantages (we checked this point only for model I). *Point 4*: We prefer to concentrate on estimates for the manufacturing and the service sector as a whole; specifics of subsectors of manufacturing and services respectively are captured in all model estimates by using 28 industry dummies, of which 10 refer to the service sector. Finally, we took into account all minor points R1 stated on page 2 of his report.

Referee 2 (R2)

Major points

R2 suggested to provide a *statement upfront* on what the OLI model predicts and which part of the OLI model is tested in the paper. In the first version, we only stated in the introduction of the paper (Section 1) that we estimate two models (model I: INT_propensity; model II: INT_function) based on the well-known OLI paradigm. It was not until subsection 2.2 (hypotheses) that we formulated more precisely our expectations stating that the explanatory power of the OLI paradigm is higher in manufacturing than in services in both models (H2, H4) and that the OLI variables are more strongly correlated with a complex FDI strategy (including R&D) than a less complex strategy (excluding R&D) (H3). To comply with the suggestion of R2 (which indeed significantly improves the paper), we extended the introduction (see Section 1, p.2) and Section 2 (see p.5) to clarify what the three components of the OLI model explain.

With respect to *L-advantages* we make clear in the revised version that we do not aim at explaining *where* a firm locates its FDI (which would require *country data*). Rather we explain, based on L-advantages of foreign locations (no differentiation by country) compared to Switzerland, *why* a firm decides to undertake FDI rather than to be an exporter. To this end, we

use *firm-level data* indicating the relevance of specific *obstacles to internationalisation*; in this specification, low obstacles represent L-advantages of foreign locations (for a similar application of "obstacles to internationalisation" see, e.g., Rammer and Schmiele 2008).

We now also mention already in the introduction and in subsection 2.1 that a test of the impact of *I-advantages* is difficult primarily due to measurement problems. First, we only are able to discriminate between equity-based (FDI: subsidiaries, majority or minority JV) and non-equity based entry modes (non-equity based co-operation, management contracts, etc. including exports). Second, as clarified in the reply to referee 3, firm size and co-operation experience are not very satisfactory proxies for I-advantages. *All in all*, we conclude in the introduction (at a general level) and in Section 2 (more specifically) that the empirical part of the study primarily refers to the OL-part of the OLI paradigm.

Furthermore, R2 is not entirely convinced of our explanation of the reasons why the determinants of internationalisation have not the same impact on internationalisation in the manufacturing and in the services sector (see p.1, *point 2*). Therefore, as already mentioned in our reply to R1, we somewhat extended the paragraphs leading up to the hypothesis H2. We now emphasise more clearly and precisely a) the higher heterogeneity of the services sector (which is highlighted by many scholars), b) the particular significance of soft capabilities in case of services as opposed to technology-related determinants in manufacturing (a point that is accepted by the referee), and c) the higher relevance of idiosyncratic and situation-specific factors in services (as shown in the International Business (IB) literature). The three arguments also are relevant for explaining differences between the two sectors with respect the choice of specific combinations of business functions, the one including, the other excluding foreign R&D (H4). In this case, the significance of the technology-related variables might be the most important element explaining why the explanatory power of the OLI model is higher for manufacturing than for services firms. Finally, R2 suggested (*second part of point 2*) that different results for the two sectors could also be due to a "hidden composition effect". However, as the empirical models I and II contain a large set of industry dummies (16 for manufacturing, 9 for services), it is highly unlikely that there is a composition effect which significantly affects the empirical results.

Minor points

We appreciate the comment of R2 with respect to the debate on the issue of global value chains (*point 3*). However, this topic goes beyond the scope of our paper.[1]

Referee 3 (R3)

R3 would like to get more precise statements with respect to differences in the explanation of international activities both between the two sectors and the two combinations of business functions. Referring to the literature we mention three *specifics of the service sector* (compared to manufacturing) which may explain such differences (see the reply to R1 and R2), that is: a) the larger heterogeneity of the service sector which is highlighted by many scholars; b) the higher relevance of soft capabilities in the services sector as opposed to technology-related factors in manufacturing (an argument that is accepted by referee 2); and c) the more important

[1] We may indicate that the data collected in our internationalisation survey would, in principal, allow such an analysis. However, the information we use in the present paper is not sufficient for such an investigation.

role played by idiosyncratic and situation-specific factors in the service sector as it is emphasised in the International Business (IB) literature. With respect to the *differences between the two business functions*, we basically argue that the relevance of the OLI variables increases with an increasing complexity of the internationalisation strategy (higher costs of realising a complex compared to a less demanding strategy, which have to be compensated by larger O-advantages in case of a complex strategy). The OLI variables should thus be correlated more strongly with the FDI strategy including foreign R&D (model II: FDI_RDP) as compared to one excluding R&D (model II: FDI_DP).

R3 argues that the statements about the suitability of the OLI paradigm are rather general. He expects that the paper highlights which dimensions of the OLI paradigm would be more (or less) appropriate in some context. It seems that R3 wants us to provide hypotheses on the relative importance of specific explanatory variables: a) for the entire business sector, b) for the differences between sectors and c) for the differences between business functions. It may be true, to some extent, that our hypotheses presented in Section 2 are quite (or too) general. Nevertheless, we formulate at several instances specific expectations: see, e.g., for H1, where we state which of the OLI drivers determines whether a firm chooses to be an exporter rather than to be a company that undertakes FDI. Or in case of H2 and H4, where we point to the different importance of soft and technology-related variables in explaining differences between sectors and business functions. Moreover, we evaluate in Section 5 whether the empirical estimates for the individual variables show for the two sectors and business functions "economically plausible" differences (this is indeed mostly the case). It is true that one could formulate such "variable by variable expectations" (though not for all variables) in the preceding Section 4 (specification of the model). However, because of the large number of explanatory variables, we would end up with a repetitive, overloaded and probably boring text as we would have to come back to these specific hypotheses in Section 5 (confrontation of the variable-specific expectations to be formulated in Section 4 with the estimation results shown in Section 5). Consequently, we stick to our procedure and shall thus, with some exceptions, comment on the variable-specific effects *only in Section 5* (economic plausibility of the estimates for the individual variables).

In addition, R3 doubts whether the firms' assessments of the relevance of specific obstacles to internationalisation (self-reported firm-level data) are suitable to specifying *L-advantages*. His critique is based on two elements: *firstly*, he argues that the use of *information on obstacles to internationalisation* is misleading as a firm may report a specific obstacle to be irrelevant "just because it has never even thought of doing business abroad". We were well aware of this argument when we designed the questionnaire of the survey. Consequently, we asked the firms to provide information on whether they consider the local/regional market at home as sufficiently large for their activities (meaning that there is no need to go international). Using this information we created the variable *"regional_market"*, which we inserted as a control variable in model I and II (see the Tables 3 to 5 of the paper). Therefore, the estimated coefficients of the L-variables are not biased. The relevance of this variable is discussed more clearly in subsection 4.2 of the revised version (specification of the explanatory variables). *Secondly*, R3 mentions in a *very general way* that the specification of the *L-variables* based on information on obstacles to internationalisation may lead to ambiguous interpretations *without stating in what way this is the case*. Although R3 does not specifically indicate the problem, we

revised the text in order to inform the reader more clearly than it was the case in the first version about the general problem of using "obstacle variables" for estimating the models we are interested in. At first sight, one would expect for all "obstacles to internationalisation" a negative sign as these represent *dis*advantages of foreign countries compared to Switzerland. In contrast, the results from model estimation show for some of the obstacles a positive sign. This result, however, is not implausible on second thought, and is often found, for example, in innovation research where "obstacles to innovation" are important explanatory variables (more recently, "obstacle variables" are also used in research on the internationalisation of firms; see, e.g., Rammer and Schmiele 2008). Several scholars, when confronted with a positive sign for some "obstacle variables", argue that firms *perceive* (or *become aware* of) specific obstacles only when they really are confronted with them (see, e.g., Galia and Legros 2004; Tourigny and Le 2004). In the present case, this probably is true, for example, for the obstacles "large cultural differences" or "insufficient intellectual property rights in host countries". We used this argument only in interpreting the empirical results in subsection 5.1 of the original paper but renounced of doing so also in subsection 4.2 (specification of the explanatory variables) as this would make the text to repetitive and overloaded.

R3 also seems to doubt whether our type of L-variables is able to explain *where* a firm undertakes FDI. However, we do not aim at explaining the location of foreign investments. We use the firm-level L-variables to determine *why* a company decides to be directly present abroad rather than to be an exporter based in Switzerland (L-advantages of foreign locations as a precondition for FDI). As mentioned in the reply to R1 and R2, we clarified this point in Section 2 of the revised paper.

R3 is right when he argues that *I-advantages* refer to individual transactions of firms (i.e. investment projects) rather than to a company as a whole. However, given our data, we are not able to account for this aspect. Moreover, R3 (similar to R2) is not convinced that firm size is an appropriate measure of I-advantages. Nevertheless, short of other indicators, we decided to use "firm size" and, as a second variable, the "experience from co-operating with other firms" as, admittedly, rough measures of I-advantages. The two variables may be interpreted as a firm's "*capacity to internalise market transactions*". However, in view of the weakness of these proxies and the general problem mentioned at the beginning of this paragraph we now indicate already in Section 1 (introduction) and in subsection 2.1 (theoretical framework) that the empirical part of the study refers *primarily* (though not exclusively) to the OL-part of the OLI paradigm, with I-advantages remaining in the background. Moreover, we comment on the problem of using firm size as an indicator of I-advantages in more detail in subsection 4.2 (specification of the explanatory part of the empirical models).

Finally, R3 suggests that we should use the "Melitz approach" (instead of the OLI model) which basically states that productivity differences among firms explain the pecking order of firms with respect to internationalisation (1. high productivity → FDI; 2. medium productivity → exports; 3. low productivity → domestic activity only). We discussed this approach in some detail in the original paper and argued why we preferred to use the OLI model (see the last paragraph of subsection 2.1 of the original paper). We indicated – and we are not alone to do so (see the literature we mentioned in the paper) – that "productivity" is a kind of a "black box" reflecting a whole bundle of individual variables whose significance deserves to be separately investigated. Moreover, R3 suggests that, given the usual results with the "Melitz model", it

would be crucial to *additionally* insert in our model a productivity measure. However, we found that in this case the productivity variable is statistically insignificant (as shown in an additional regression not presented in the paper). This result is not surprising, given the high correlation between productivity and the OI-variables; the estimates of another regression (not presented in the paper) show that productivity can be explained to a high extent by the OI-part of the OLI model. We clarified this point in the last paragraph of subsection 2.1.

Basile et al. (2003). Foreign Expansion by Italian Manufacturing Firms in the Nineties: an Ordered Probit Analysis. Review of Industrial Organization 23(1), 1-24

Galia, F. and Legros, D. (2004). Complementarities between obstacles to innovation: evidence from France, *Research Policy* 33, 1185-1199.

Rammer, C. and A. Schmiele (2008), Globalisation of Innovation in SMEs: Why they go abroad and what they bring back home. *Applied Economics Quarterly* 54(59, Suppl.), 173–212.

Tourigny, D. and Le, C.D. (2004). Impediments to innovation faced by Canadian manufacturing firms, *Economics of Innovation and New Technology* 13(3), 217-250.