# A Further Revision of Stopford and Wells Model for MNC Matrices

Jane XJ Qiu*
Australian School of Business,
University of New South Wales,
Sydney, Australia, NSW 2052
Tel.: +61-0-4 3203 3624
Fax: +61-2-9662 8531
Email: janexjq@gmail.com

Lex Donaldson
Australian School of Business,
University of New South Wales,
Sydney, Australia, NSW 2052
Tel.: +61-2-9385 9723
Email: lexd@agsm.edu.au

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**ABSTRACT**

This paper extents the strategy-structure model for matrix structures used by multinational companies (MNCs). We reexamine the Stopford and Wells Model and revise it to accommodate a wide range of matrices. The key for the revision is to use "corporate integration", instead of "foreign product diversification". The reason is that foreign product diversification has a curvilinear relationship with the matrix structures, and is thus not a determinant factor for the utilization of matrix structures. In contrast, corporate integration is the over-riding strategy pursued by the majority of MNCs using the matrices, which enables integration across various geographical regions or product lines. The revised model, formed by "corporate integration" and "area diversification", is empirically supported in a secondary analysis using data from a study of German MNCs.

Keywords: strategy and structure, organizational structure, international strategy, multinational corporations, organizational design, strategy implementation

More than three decades ago, matrix was hailed as "the most significant contemporary development in organization design" (Mintzberg 1979: 161). Today, matrix has become a necessary form of organization for a large number of multinational companies (MNCs) (Galbraith 2008). However, it is also widely admitted that matrix is costly and conflict-prone, and should be used only when necessary (Knight 1976; Davis & Lawrence 1977; Donaldson 2009). Otherwise, it is "not only needless but harmful" (Kagono 1981: 171). So, identifying the strategic condition in which an MNC should use the matrix is an important research question to both academic researchers and senior managers.

Traditionally, the strategic condition fitted by the matrix has been the one suggested by Stopford and Wells (1972) in their seminal study of strategy-structure fits for MNCs: where both the strategic needs of foreign product diversification and area diversification coexist, the MNC tends to use the product-geographical matrix. The reason is that the product-geographical matrix contains dual structural dimensions: the product divisions dimension that facilitates foreign product diversification, and the geographical divisions dimension that facilitates area diversification. Therefore, they predicted that, in the two-dimensional model formed by the strategies of "foreign product diversification" and "area diversification", MNCs with a product-geographical matrix would concentrate in the "high-high" location (i.e., the upper right hand corner), where both strategies are high. However, this prediction was not supported by their data, because the data only contained three MNCs using the matrix and these MNCs are not all associated with the "high-high" combination of foreign product diversification and area

diversification. Thus, the strategy-structure fit for the product-geographical matrix has attracted continuous research attention. However, the association of the product-geographical matrix to the "high-high" combination of foreign product diversification and area diversification remains unproven empirically.

Another issue concerning the applicability of the Stopford and Wells Model is the different types of matrices. In Stopford and Wells (1972), the matrix structure is considered as simply the product-geographical matrix. However, different types of matrices have been identified in subsequent studies. In Wolf and Egelhoff (2002) and Wolf et al. (2007), three more types of matrices that contain a functional structural dimension (hereinafter referred to as "functional matrix") were included. By containing dual structural dimensions, the functional matrices would be expected to fit dual strategies and thus emerge in the "high-high" position in a two-dimensional model. However, very few studies in the international strategy-structure literature have tried to test whether the Stopford and Wells Model can be applied to these functional matrices, i.e., whether these functional matrices are located in the "high-high" position in the Stopford and Wells Model.

More recently, Donaldson (2009) developed a strategy-structure model based on the popular "integration – responsiveness" framework. His model is able to locate the product-geographical matrix and the functional matrices in the "high-high" position. However, the matrices are mixed in with other structures, e.g., the mixed structure and the worldwide product divisions structure, in the "high-high" position.

To extend the international strategy-structure theory, we aim at developing a model that explains the strategic condition in which matrices are used exclusively, i.e., a model that locates the matrices and *only* the matrices in the "high-high" position. In doing so, we address an important research question concerned by both researchers and practitioners: under what specific strategic condition should MNCs choose the matrix, instead of any other structures?

We suggest that the key for such a model is the strategy of "corporate integration", which should be used to replace "foreign product diversification" in the Stopford and Wells Model. This is because one of the key strategic tasks of MNC matrices is to cope with high corporate integration, allowing the management of interdependence. Particularly, corporate integration is important for the functional

matrices, because the functional structural dimension contained in these matrices are used by MNCs mainly to facilitate corporate integration in various functional areas. Hence, the Stopford and Wells Model is revised for the matrices, and particularly the functional matrices. The two dimensions of the revised model are corporate integration and area diversification.

## THEORIES AND HYPOTHESES

This paper follows the international strategy-structure paradigm and focuses on structures used by MNCs (hereinafter referred to as "MNC structures"). In this paradigm, the MNC structure is usually studied as the apex structure through which the headquarters (HQ) controls the foreign subsidiaries (Daniels et al. 1985; Davis &Lawrence 1977; Donaldson 2009; Egelhoff 1982, 1988a, 1988b, 1991; Stopford & Wells, 1972; Wolf & Egelhoff 2002; Wolf et al. 2007). Furthermore, we follow Wolf and Egelhoff (2002) and consider four elementary structures (the international division, the worldwide functional structure, the worldwide product divisions, and the worldwide geographical divisions) and four matrix structures (the product-geographical matrix, and the three functional matrices ─ the functional-product matrix, the functional-geographical matrix and the functional-product-geographical matrix).

### *Reexamining the Stopford and Wells Model*

One of the most widely used strategy-structure models for MNC structures was developed by Stopford and Wells (1972), by using two international strategies: "foreign product diversification" and "area diversification" (see Figure1). In Stopford and Wells (1972), foreign product diversification is operationalized as the foreign product diversity (product lines offered for sale in foreign countries), and area diversification as foreign sales (percentage of sales occurred in foreign countries). They proposed that when these two strategies are examined simultaneously, certain strategy-structure patterns will emerge for a number of structures. They also predicted that when levels of both foreign product diversification and area diversification are high, MNCs tend to use the product-geographical matrix. The reason is that the product divisions and the geographical divisions are established with shared jurisdiction over the foreign subsidiaries (Stopford & Wells 1972: 27). However, this prediction was not supported by

their data. Subsequently, more researchers tried to identify the strategy-structure linkage of MNC matrices, but the association of matrices to the "high-high" position in the Stopford and Wells Model remains unproven empirically (Chi 1998, 2004; Daniels, Pitts & Tretter 1985; Egelhoff 1988a; Wolf, Egelhoff & Adzic 2007).

Because the prediction of Stopford and Wells about the product-geographical matrix is still empirically inconclusive, we first reexamine this original prediction.

***Hypothesis 1*:** The product-geographical matrix has high levels of both foreign product diversification and area diversification.

In the Stopford and Wells Model (1972), only the product-geographical matrix was considered. However, Wolf and Egelhoff (2002) clearly identified three more matrices other than the product-geographical matrix. These new matrices all contain a worldwide functional structural dimension: the functional-geographical matrix, the functional-product matrix and the functional-product-geographical matrix. So, three out of four types of MNC matrices in Wolf and Egelhoff (2002) are functional matrices. Furthermore, in the sample of Wolf and Egelhoff (2002), nineteen out of the twenty-four (79 per cent) MNCs using the matrix structure had one of the three functional matrices. Thus, the functional matrices account for the majority among all MNC matrices, both in terms of theoretical typology and empirical evidence. Therefore, we test the generalizability of the Stopford and Wells Model to the functional matrices, by testing whether the functional matrices fit the "high-high" combination of foreign product diversification and area diversification.

***Hypothesis 2*:** All types of functional matrices have high levels of both foreign product diversification and area diversification.

### *Revising the Stopford and Wells Model*

Based on the empirical findings of many MNCs turning towards matrix structures, researchers suggested that the matrix structures, by having dual structural dimensions, provides an advantage over elementary structures when an MNC encountered dual strategic demands (Davis & Lawrence 1977; Galbraith & Kazanjian 1986; Galbraith 2008). In spite of these arguments about the matrix advantage, the prediction of the matrix in the "high-high" position (i.e., the upper right hand corner) in the Stopford and Wells

Model remains unverified empirically. Daniels et al. (1985) even found opposite results, suggesting that very few firms with both high foreign product diversification and area diversification had used the matrix. Egelhoff (1988a) found that foreign product diversity and foreign sales as a combination were not able to differentiate the product-geographical matrix from the elementary worldwide product divisions structure. Again, in a study of 57 German MNCs, Wolf et al. (2007) reported that the combination of these two contingencies showed no significant difference between the matrix structures and the elementary structures.

Although the two contingencies in the Stopford and Wells Model are problematic when applied to the matrices, there are grounds for using dual contingencies to form the strategy-structure model for matrices. Because matrices are designed to cope with dual strategic needs (Davis & Lawrence 1977; Galbraith & Kazanjian 1986), they should be distinguished from the elementary structures by associating with high levels of dual strategies. However, the strategies used to form the Stopford and Wells Model need to be revised, so as to generate a common "high-high" pattern for various matrices, including the functional matrices. The key to such revision is to take out "foreign product diversification" in the Stopford and Wells Model, and replace it with "corporate integration".

*Foreign product diversification misfitted by matrix*

Traditionally, foreign product diversification is viewed as one of the most important strategic factors that influences many firm characteristics, including the level of divisionalization (Chandler 1962; Mahoney 1992), the degree of foreign expansion (Wiersema & Bown 2008), as well as performance (Bettis 1981). However, foreign product diversification should not be used as a contingency for the matrices, because the matrices do not fit high foreign product diversification. The relationship between foreign product diversification and the matrices can be explained by the information-processing perspective (Egelhoff 1982, 1988a, 1988b, Wolf & Egelhoff 2002, Wolf et al. 2007). Under this perspective, information-processing is used as an explanatory concept between strategy and structure. MNCs have strategy-structure fits when the information-processing capacities of their structures fit the information-processing requirements of their strategies (Egelhoff 1982). The information-processing capacity of the matrix is considered high because it can process more information than the elementary structure through its

multiple structural dimensions (Egelhoff 1988a, 1988b). However, foreign product diversification has a curvilinear relationship with information-processing, as will be discussed later. So, when foreign product diversification increases to a high level, the information-processing capacity required is low. In this situation, the matrices, which are used to process large amount of information, are unnecessary.

(Insert Figure 2 about here)

When a company has a low level of foreign product diversification, it tends to use the functional structure, which provides functional specialization for the company (Chandler 1962). In the worldwide functional structure, product matters come together and are first integrated at the HQ level. If foreign product diversification were introduced, it would quickly overload the information-processing capacity at the HQ (Egelhoff 1982). So, the worldwide functional structure does not fit higher levels of foreign product diversification (Figure 2).

As foreign product diversification increases to medium-low, each product needs information, so the total information-processing capacity required increases. As the requirement to process more information arises, MNCs tend to use the matrix to process more information through multiple structural dimensions (Davis & Lawrence 1977; Galbraith & Kazanjian 1986; Egelhoff 1988a, 1988b). Having a medium-low foreign product diversification means there are few product lines or the product lines are highly related. In this circumstance, a functional structural dimension in the matrix can be used to coordinate and integrate similar functional activities (e.g., R&D) between the product lines. So, functional matrices are used when foreign product diversification is medium-low (Figure 2).

When foreign product diversification increases to medium-high, the functional matrices, by containing a worldwide functional structural dimension, pose constraints on product diversification. To meet the high information-processing requirement, MNCs tend to use the matrix without the functional structural dimension, i.e., the product-geographical matrix (Figure 2).

As foreign product diversification increases to high, each product line becomes more unrelated and so becomes an autonomous business. The information-processing capacity required becomes lower, because little information exchange is needed between different product lines. When foreign product diversification increases to a very high level, each product line is run as a separate system, with almost all

information about the business being processed inside each of the product lines. In this circumstance, an elementary worldwide product divisions structure, rather than a matrix, is more appropriate (Figure 2).

Hence, as foreign product diversification increases from low to intermediate and to high, the information-processing capacity required first increases and then decreases. With information-processing as the explanatory factor in the middle, the relationship of foreign product diversification and the matrices (particularly the functional matrices) is shown to be curvilinear. So, the contingency of foreign product diversification is problematic when applied to the matrices as a group, because high foreign product diversification is fitted by the elementary worldwide product divisions structure instead of the matrices.

*Corporate integration fitted by matrix*

Corporate integration, instead of foreign product diversification, is one of the key strategic factors, together with area diversification, that leads to the utilization of the matrices. Corporate integration represents the international integration of activities within the MNC (Dunning & Robson 1987). This strategy is a critical contingency for MNCs operating in a global industry characterized by high degree of international competition (Roth & Morrison 1990). When competition is fierce and global economies of scale are desired, the HQ of an MNC tends to integrate the activities of its foreign subsidiaries on a worldwide basis to maintain its competitive position (Porter 1986). A high level of corporate integration leads to increased interdependence within the MNC and thereby requiring increased coordination between the subunits (Roth, Schweiger & Morrison 1991). In this situation, a matrix structure is often used as a coordination device to cope with interdependence (Mintzberg 1979: 161).

Corporate integration tends to occur first at the level of the function, rather than the level of the corporate, because without enhancing the MNC's ability to perform individual functions (e.g., manufacturing) globally, the potential for cross-functional (e.g., R&D and manufacturing) integration would be limited (Malnight 1995). Corporate integration within functions is best coped with by the functional matrices. The functional structural dimension in these matrices facilitates corporate integration, by helping the MNC to cope with the interdependency that cuts across the worldwide product divisions or the worldwide geographical divisions (Wolf et al. 2007). For instance, a common R&D department in the

HQ integrates activities across laboratories worldwide, and coordinates technology transfers between the HQ and the foreign subsidiaries (Prahalad & Doz 1987). A common finance department in the HQ enhances the MNC's tax benefits on a global scale by coordinating global tax arrangements such as transfer pricing (Adelberg 1986). A common marketing department in the HQ centralizes marketing decisions across borders regarding important issues such as global brand names and product positioning, and thus enhances worldwide marketing effectiveness (Kim, Park & Prescott 2003). A common manufacturing department in the HQ facilitates economies in production through running the production plants in a more integrated way (Donaldson 1985). General Motors (GM), for instance, restructured itself into a functional-geographical matrix during 1998-2004, as a response to the fierce competition of rivals such as Toyota and Nissan (Garvin & Levesque 2006). By having the functional structural dimension, GM integrated its manufacturing activities on a global scale and managed to shrink the number of its assembly plants and realize necessary economies of scale, which is essential to effective cost control (Garvin & Levesque 2006).

Hence, in the functional matrices, the worldwide functional structural dimension facilitates strong corporate integration within various functional areas. On the other hand, the product-geographical matrix also fits corporate integration because the product divisions dimension in this matrix integrates operations within each product line (Wolf & Egelhoff 2002). So, for both the functional matrices and the product-geographical matrix, corporate integration is one of the key strategies that should be included in the strategy-structure model.

Another strategy that should be included in the strategy-structure model is area diversification, which was used in the Stopford and Wells Model. The reason is that, many MNCs, while pursuing corporate integration, continue to expand geographically, so as to achieve higher economies of scale and location-specific advantages (Wiersema & Bown 2008). Hence, for MNCs in a highly competitive industry, the pressure to integrate global operations and the pressure to respond to high geographical diversification coexist, and become the over-riding strategic goal to achieve (Prahalad & Doz 1987; Barlett & Ghoshal 1989; Ghoshal & Nohria 1993). To cope with this strategic goal characterized by dual pressure, MNCs tend to use matrices. The reason is that the multiple structural dimensions of the matrices help the MNC to cope with different strategies simultaneously (Chakravarthy & Perlmutter 1985; Davis & Lawrence

1977; Galbraith & Kazanjian 1986). Furthermore, an MNC needs to handle a much larger amount of information when integrating operations dispersed in different geographical regions. Compared with elementary structures, matrices possess superior capability to process large amounts of information through multiple structural dimensions (Egelhoff 1988a, 1988b). Hence, MNCs pursuing the "high-high" combination of corporate integration and area diversification tend to use matrices.

Therefore, corporate integration is the key contingency for various matrices and should be used to replace foreign product diversification in the Stopford and Wells Model. Corporate integration and area diversification form the dual strategic dimensions pursued by MNCs in a highly competitive global industry. These MNCs will tend to use the matrix to cope with dual strategic pressure.

***Hypothesis 3*:** All matrices, including the product-geographical matrix and the functional matrices, are associated with high levels of both corporate integration and area diversification.

In this section, we review the Stopford and Wells Model and suggest a revised model for the matrices. In the next section, we test and compare the original Stopford and Wells Model and the revised model with the data from Wolf and Egelhoff (2002). We test whether the Stopford and Wells Model has explanatory power over the product-geographical matrix in this data (*Hypothesis 1*), and whether it can be generalized to the functional matrices (*Hypothesis 2*). Then, we test the revised model for its explanatory power over various matrices, including the product-geographical matrix and the functional matrices (*Hypothesis 3*).

## SECONDARY ANALYSIS

In a study of 95 German MNCs, Wolf and Egelhoff (2002) reexamined the Stopford and Wells Model by testing the strategy-structure fits of a number of structural dimensions. They found that the worldwide product divisions structural dimension has a high level of foreign product diversity, while the worldwide geographical divisions dimension has a high level of foreign sales. Thus, their findings support the traditional international strategy-structure fits proposed by Stopford and Wells (1972). However, Wolf and Egelhoff (2002) did not address nor test the primary research question from Stopford and Wells regarding the matrix: which two strategy variables should be used *simultaneously* to generate the "high-high" strategy-structure pattern for the matrices? To answer this question, we conduct a secondary

analysis with the data from the Wolf and Egelhoff study (2002). We apply both the Stopford and Wells Model and the revised model to eight MNC structures from the Wolf and Egelhoff (2002).

The Stopford and Wells Model is formed by foreign product diversification and area diversification. Foreign product diversification is operationalized as foreign product diversity. In Wolf and Egelhoff (2002), foreign product diversity is measured by the number of 5-digit product classes associated with the company, because foreign product diversity and total company product diversity are highly correlated in most German firms with foreign sales (Wolf & Egelhoff 2002: 189). Area diversification is operationlized as foreign sales. Foreign sales (termed as "size of foreign operation" in Wolf & Egelhoff 2002) is measured by the percentage of a company's sales occurring outside of the parent country (Wolf & Egelhoff 2002: 189).

The revised model is formed by corporate integration and area diversification. Following Donaldson (2009), corporate integration is operationalized as intracompany transfers. Intracompany transfers is measured by adding (1) the percentage of the parent company's procurement of final and intermediate products that are sourced form the company's foreign operations, to (2) the percentage of the parent company's sales which are transfers to the company's foreign operations (Wolf & Egelhoff 2002: 189). Area diversification in the revised model is operationalized as foreign manufacturing. Foreign manufacturing (termed as "size of foreign manufacturing" in Wolf and Egelhoff, 2002) is measured by the percentage of a company's manufacturing occurring outside of the parent country (Wolf & Egelhoff 2002: 189).

Following the international strategy-structure tradition (Daniel, Pitts & Tretter 1985; Donaldson 2009; Egelhoff 1982, 1988a, 1988b; Wolf & Egelhoff 2001, 2007), the mean strategic value of the sample MNCs are used as the strategic value of each structure in the secondary analysis, as shown in Table 1 (Wolf & Egelhoff 2002).

(Insert Table 1 about here)

The Stopford and Wells Model is unilluminating for the matrices mainly because foreign product diversification has a curvilinear relationship with the matrices. In Table 2, all MNC structures are ranked by their levels of foreign product diversity. When foreign product diversity is lowest, MNCs use the elementary worldwide functional structure (2.3), which constrains the level of product diversification. As

foreign product diversity increases to medium-low, MNCs use the functional matrices (ranging from 2.4 to 3.5). When foreign product diversity increases to medium-high, MNCs use the product-geographical matrix (5.4), which does not contain a functional structural dimension. When foreign product diversity hits top, MNCs return to the elementary structure, i.e., the worldwide product divisions (6.1). Hence, the curvilinear relationship between foreign product diversification and the matrices described in Figure 2 is empirically confirmed.

(Insert Table 2 about here)

Figure 3 shows the results generated by the original Stopford and Wells Model, in which foreign product diversification (foreign product diversity) and area diversification (foreign sales) are the two axes. The product-geographical matrix is located in the "high-high" position, i.e., the upper right hand corner – supporting *Hypothesis 1*. Thus, the prediction of Stopford and Wells (1972) about the product-geographical matrix having high levels of both foreign product diversification and area diversification is empirically supported. The Stopford and Wells Model has remained impressively robust to explain the strategy-structure fit of the product-geographical matrix.

(Insert Figure 3 about here)

However, all functional matrices, while having high levels of foreign sales (ranging from 55% to 60%), only have low to intermediate levels of foreign product diversity (ranging from 2.4 to 3.5). The functional matrices are located in the "high-low" position, i.e., the lower right hand corner – *Hypothesis 2* not supported. Hence, the Stopford and Wells Model demonstrate little explanatory value for the functional matrices. When the functional matrices are included, the Stopford and Wells Model is not able to produce a common "high-high" strategy-structure pattern for the matrices as a group. This is mainly because foreign product diversification is not a valid contingency for the matrices, as discussed earlier.

When corporate integration is used to replace foreign product diversification, the strategy-structure pattern for the matrices is changed. Figure 4 shows the results generated by the revised model, in which corporate integration (intracompany transfers) and area diversification (foreign manufacturing) are the two axes. All matrices, including the product-geographical matrix and the functional matrices, are simultaneously high on intracompany transfers (ranging from 28% to 47%) and on foreign manufacturing (ranging from 38% to 56%). Thus all the MNC matrices are located in the "high-high" position (i.e., the

upper right hand corner) in the revised model – supporting *Hypothesis 3*. Meanwhile, none of the elementary structures are located in the "high-high" position. So, the revised model produced a clear-cut "high-high" pattern for matrices exclusively.

(Insert Figure 4 about here)

The results show that the original Stopford and Wells Model is not applicable to the matrices as a group when the functional matrices are included. The key to a more valid model is to use corporate integration, instead of foreign product diversification. The combination of corporate integration and area diversification is empirically confirmed to be the major factors that lead to the matrices, and particularly those containing a functional structural dimension.

## LIMITATION

There are a number of inherent limitations to the present paper which we wish to point out.

First, the sample of the Wolf and Egelhoff study (2002) only included German firms, which is a limited representation of MNCs worldwide. Egelhoff (1982) suggested that the conceptual model and hypotheses are meant to be true across cultures and different nationalities because the underlying logic between strategy and structure are thought to be similar across cultures. However, a data set of MNCs which are of diverse nationalities may lead to results that are more representative of MNCs in general.

Second, corporate integration is represented by intracompany transfers, which, in Wolf and Egelhoff (2002), is measured only by the transaction between the HQ and the foreign subsidiaries. However, integration and interdependence within an MNC also includes that between different subsidiaries (Harzing 2000). So, a complete set of data on intracompany transfers at the subsidiary level is desired to obtain a more comprehensive measurement of corporate integration.

Moreover, the measurement of foreign product diversity in Wolf and Egelhoff (2002) equals that of product diversity. The reason is that foreign product diversity and total company product diversity are highly correlated in most German firms with foreign sales (Wolf & Egelhoff 2002). However, this correlation relationship may vary for firms in other countries. So, a more accurate measurement of foreign product diversity may be required in order to generalize the findings to MNCs in other countries.

## CONCLUSIONS

This paper seeks to extend the strategy-structure theory for MNC matrices. The empirical results confirm the original prediction by Stopford and Wells, showing that the product-geographical matrix is associated with the "high-high" levels of foreign product diversification and area diversification. However, the Stopford and Wells Model demonstrates little explanatory value for the functional matrices, because foreign product diversification is not fitted by these matrices.

To generate a common "high-high" strategic pattern for the matrices, corporate integration, instead of foreign product diversification, is the key. The revised model, formed by corporate integration and area diversification, is empirically supported. All matrices, and only the matrices, are located in the "high-high" position. Hence, the intuition of Stopford and Wells that matrix structures cater to handle high levels of dual strategies is supported, although the strategic factors are somewhat different. In the international strategy-structure model for matrices, corporate integration arises to be one of the over-riding strategic factors. Corporate integration is especially important when the functional matrices are included, because the functional structural dimension contained in these matrices are used by MNCs to integrate global operations for its competitive advantage.

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Table 1. Mean strategic values of eight structures in the Wolf and Egelhoff study (2002) of 95 German companies

| Contingency variable | Elementary MNC structure | | | | Matrix MNC structure | | | |
|---|---|---|---|---|---|---|---|---|
| | International division structure | Worldwide functional structure | Worldwide product divisions | Worldwide geographical divisions | Product -geographical matrix | Functional -geographical matrix | Functional - product matrix | Functional - product -geographical matrix |
| *Number of firms* | *7* | *8* | *19* | *2* | *5* | *5* | *6* | *8* |
| Foreign product diversity (number of product lines) | 3.3 | 2.3 | 6.1 | 3 | 5.4 | 2.4 | 3.5 | 2.4 |
| Foreign Sales % | 37 | 42 | 56 | 58 | 67 | 59 | 55 | 60 |
| Intracompany transfers % | 18 | 42 | 28 | 6 | 40 | 38 | 28 | 47 |
| Foreign manufacturing % | 21 | 28 | 34 | 40 | 38 | 47 | 43 | 56 |

*Source: Table 2 in Wolf and Egelhoff (2002)*

Table 2. MNC structures ranked by foreign product diversity

| Ranking by foreign product diversity | MNC Structure | foreign product diversity (number of product lines offered for sale in foreign countries) |
|---|---|---|
| 1 | Worldwide product divisions | 6.1 |
| 2 | Product-geographical matrix | 5.4 |
| 3 | Functional-product matrix | 3.5 |
| 4 | International division | 3.3 |
| 5 | Worldwide geographical divisions | 3.0 |
| 6 | Functional-geographical matrix | 2.4 |
| 7 | Functional-product-geographical matrix | 2.4 |
| 8 | Worldwide functional structure | 2.3 |


Figure 1. The Stopford and Wells Model of international strategy-structure fit

*Source: Figure 5-1in Egelhoff (1988b, p.65)*

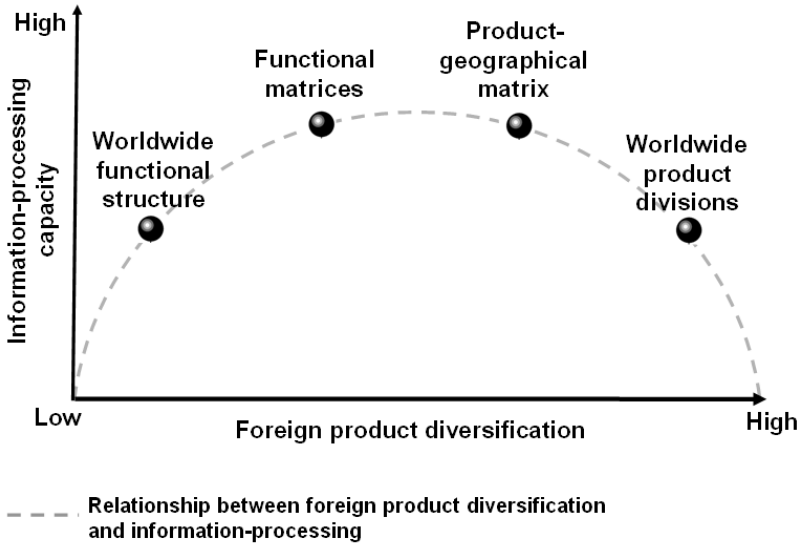


Figure 2. Curvilinear relationship between foreign product diversification and matrices

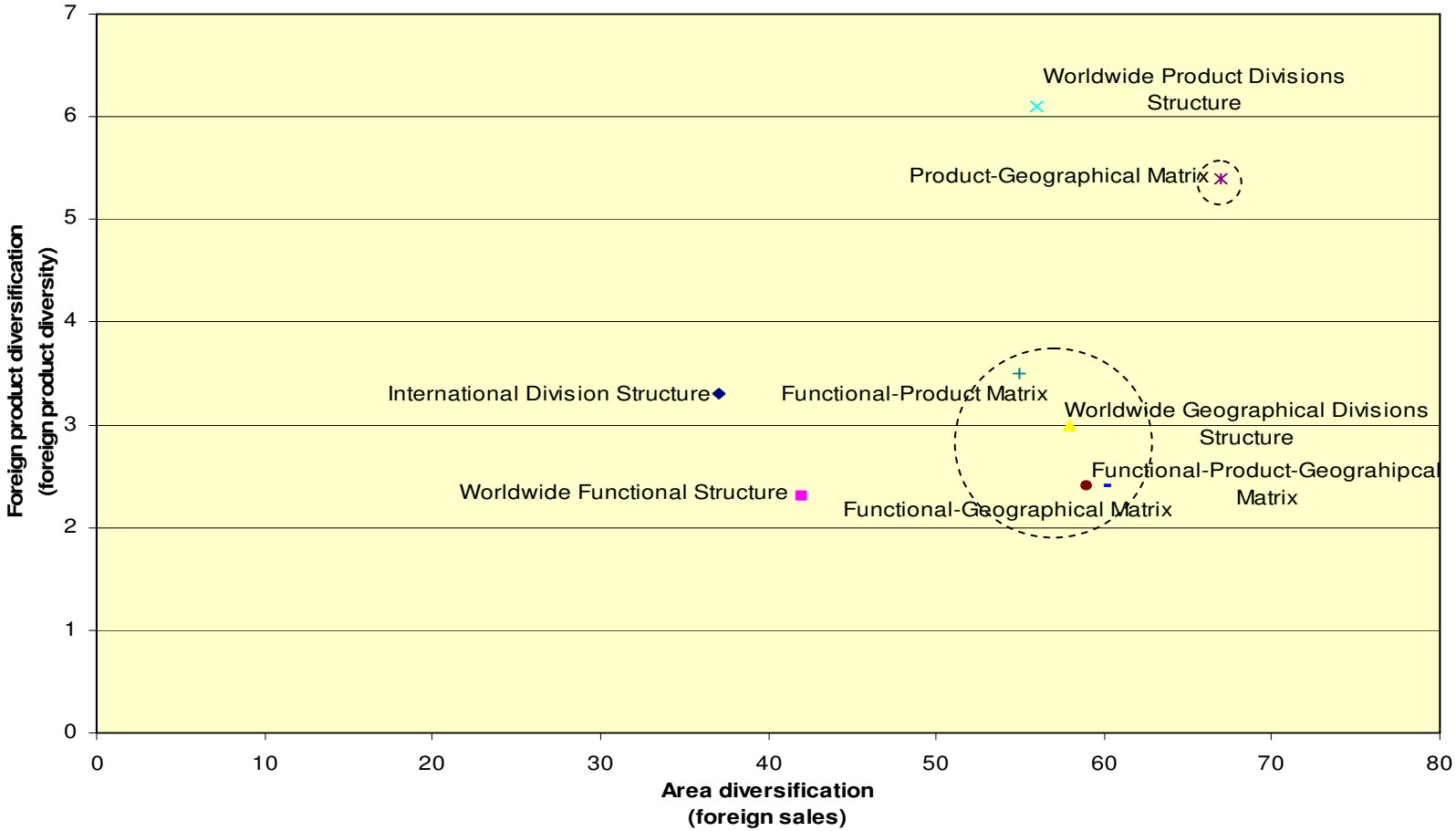


Figure 3. Stopford and Wells Model: functional matrices misfit foreign product diversification

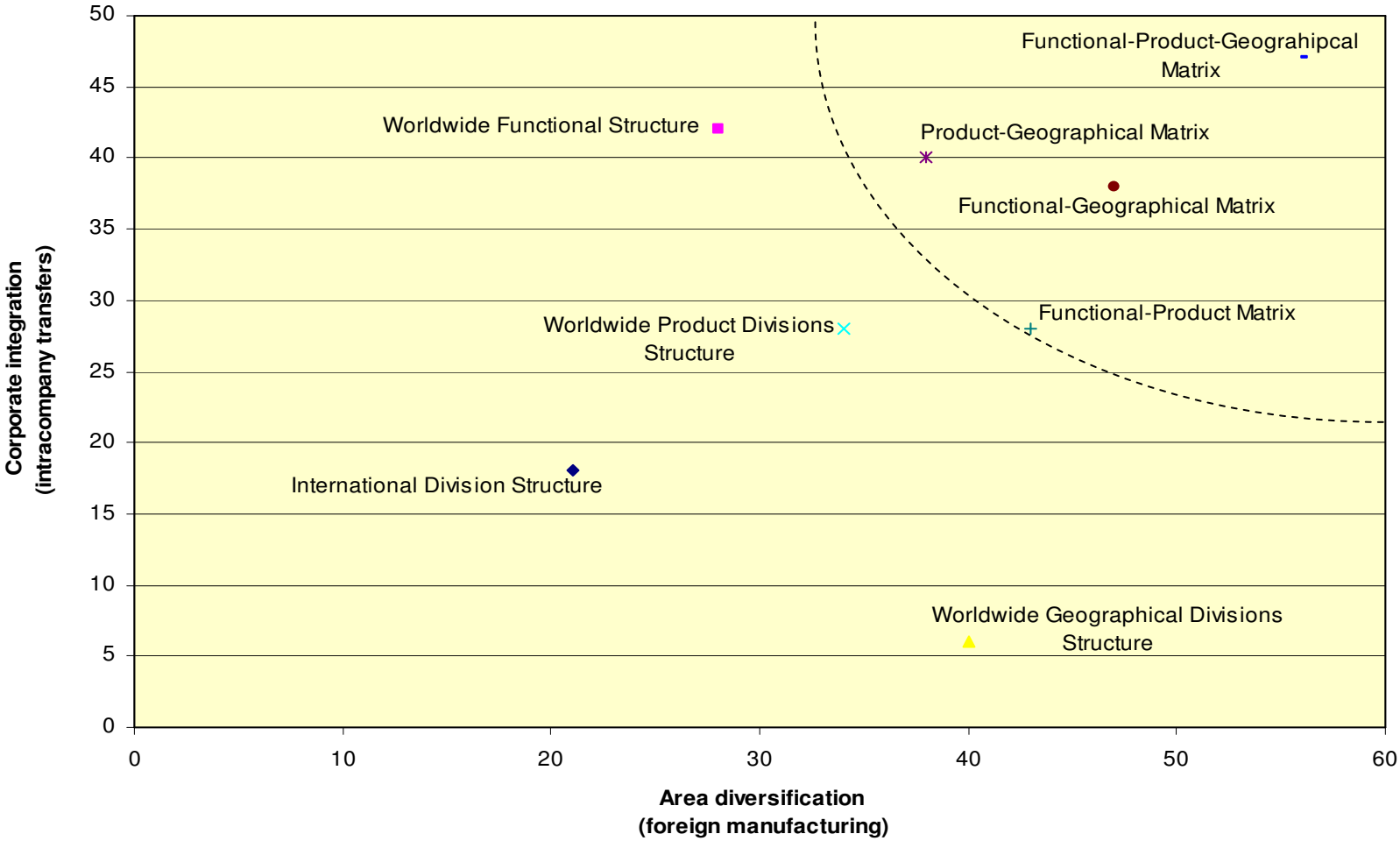


Figure 4. Revised model: all matrices fit “high-high” combination of corporate integration and area diversification