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Understanding and managing international growth of new products

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Abstract

Growth is one of the most compelling goals of managers today. This paper addresses the following questions about the international growth of new products in Europe: Does the pattern of growth differ across countries? If so, does culture or economics explain the differences? What are the implications of these results for new product strategy?

The results show that the pattern of growth differs substantially across European countries. These differences are explained mostly by economic wealth and not by culture. The study addresses the implications of these results for: (a) the choice of a waterfall versus sprinkler strategy for the introduction of a new product; (b) the global versus local marketing of a new product; and (c) managing a firm's expectations about new product growth.

Keywords: New product growth; International marketing; International diffusion

1. Introduction

Growth is one of the most persistent and compelling goals of managers today. Firms' accountability to stock markets or profit-seeking owners ensures that next to profitability, growth is the most important goal of ongoing enterprises. Some analysts rank growth as an even higher goal than profitability because of its potential for future revenues and profits.

For most firms, the introduction of new products is the primary engine of growth. However, new consumer durables do not grow evenly from the instant of introduction. Rather, they typically show an S-shaped sales curve consisting of at least three distinct stages: (1) an introductory stage of little or no growth; (2) a growth stage with very high growth; and (3) a maturity stage marked by little or negative growth (Mahajan, Muller, & Bass, 1990). The growth stage is bounded by what has been

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Table 1
Overview of prior related literature

	Dependent variables	Independent variables	Sample composition		Key findings
			Products	Countries	
Gatignon et al. (1989)	p and q (Bass model)	Cosmopolitanism, mobility, sex roles	Dishwasher, deep freezer, lawnmower, pocket calculator, car radio, color TV	Belgium, Denmark, France, W. Germany, Italy, Netherlands, UK, Austria, Finland, Norway, Portugal, Spain, Sweden, Switzerland	Cosmopolitanism, mobility and sex roles affect diffusion pattern (as operationalized by p and q of the Bass model). These effects may differ between product categories.
Takada and Jain (1991)	q (Bass model)	Culture (high vs. low context), communication (homophilous vs. heterophilous)	Black and white TV, washing machine, air conditioner, car, refrigerator, calculator, vacuum cleaner, radio	US, Japan, South Korea, Taiwan	The imitation coefficient of the Bass model is positively related to the time lag of product introduction between countries. The rate of adoption in countries characterized by a high context culture and homophilous communication is higher than in countries with low context culture and heterophilous communication.
Helsen et al. (1993)	p, q, and τ^* (Bass model)	Mobility, health, foreign trade, standard of living, cosmopolitanism	Color TV, VCR, CD player	Austria, Belgium, Denmark, Finland, France, Japan, Netherlands, Norway, Sweden, Switzerland, UK, US	Little agreement exists between the traditional-derived country segments and diffusion-based country segments. Macro-level variables do not fully explain differences in diffusion patterns across countries.
Kalish et al. (1995)	Cumulative adopters, profitability	Lead/lag effect, costs, competition, length of life cycle, market size, innovativeness, market growth	Analytical model	Analytical model	The authors delineate a set of conditions that determine whether companies should follow a waterfall or a sprinkler strategy in new product introduction. The authors find that the current market conditions favor a sprinkler rather than a waterfall strategy.
Putsis et al. (1997)	Cumulative adopters, sales	Cumulative adopters in other countries (cross-country effects), population, TV use, GDP per capita	VCR, CD player, microwave oven, home computer	Great Britain, Germany, France, Italy, Spain, Belgium, Denmark, Netherlands, Austria, Sweden	The authors find evidence of significant cross-country interaction effects. Germany, France, Italy and Spain are the most gregarious countries in Europe, as they have the highest rates of contact with other countries, and have relative quick adoption internally as well.
Dekimpe et al. (2000)	Transition rate to implementation and confirmation	GNP per capita Ethnic heterogeneity Size of old technology installed base Time of trial	Digital telecommunication switches	More than 160 countries	The authors find strong inter-country contagion effects. The more countries that have adopted or the longer the international experience with an innovation, the higher the chances that other countries will also implement the innovation. Innovative countries are wealthier. Countries with homogeneous social systems reach full confirmation faster.

Kumar and Krishnan (2002)	Cumulative adopters, Sales	Cumulative adopters, t and m in own country and cumulative adopters in other country (for cross-country effects)	CD player, cellular phone, microwave oven, home computer	Belgium, Germany, Norway, Denmark, Finland, United Kingdom, France	The authors found evidence of significant lead lag, lag lead, and simultaneous cross-country interaction effects. These cross-country interaction effects are affected by similarity (cultural and economic) between countries.
Talukdar et al. (2002)	p, q, and α (Bass model)	Purchase power parity (PPP), willingness to pay, international trade, urbanization, access to information, income inequality, introduction lag vs. lead country	VCR, CD player, microwave, camcorder, fax machine, cellular phone	Canada, Mexico, US, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK, Australia, China, Hong Kong, India, Malaysia, Philippines, Singapore, South Korea, Thailand, Argentina, Brazil, Chile	Developing countries have a slower adoption rate, compared to that of developed countries. PPP, urbanization and international trade of a country affects a new product's penetration potential. Information access and introduction lag affects the coefficient of external influence. Heterogeneity in ethnicity and introduction lag affects the coefficient of internal influence.
Tellis et al. (2003)	Time to takeoff	GDP per capita, income inequality, activity rate women, economic openness, uncertainty avoidance, masculinity, need for achievement, industriousness, media intensity, mobility, education, product class, penetration, prior takeoffs, introduction year.	CD player, color TV, computer, dishwasher, dryers, freezer, microwave oven, refrigerator, VCR, washing machine	Denmark, Norway, Sweden, Finland, Ireland, Belgium, Switzerland, Austria, Netherlands, Germany, Italy, Spain, France, United Kingdom, Greece, Portugal	Sales of most new products display a distinct takeoff in various European countries, at an average of 6 years after introduction. The time to takeoff varies substantially across countries. It is almost half as long in Scandinavian countries as in Mediterranean countries. While culture partially explains inter-country differences in time to takeoff, economic factors are neither strong nor robust explanatory factors.
Van den Bulte and Stremersch (2004)	q/p	Individualism, uncertainty avoidance, power distance, masculinity, competing standards, income inequality	52 consumer durables (e.g., Color Television, VCR, cellular telephone, microwave oven)	28 countries	The q/p ratio is positively associated with income inequality of a country, supporting the heterogeneity-in-thresholds interpretation. It also varies with four of the Hofstede dimensions of national culture, supporting the social contagion interpretation. The study also finds that products with competing standards have a higher q/p ratio. Finally, it finds effects of national culture only for products without competing standards.

(1) The findings stated in the last column of this table for each author (team) are based on the statements of the authors and do not necessarily indicate that the authors of the present paper agree with the claims made by these prior papers. We also focus on their substantive contribution and not so much on their possible methodological contribution.
(2) The symbols p, q, m, α, and τ^* are the coefficient of innovation, imitation, market potential, penetration potential and time to peak sales, respectively, in the Bass diffusion model.
(3) We only included articles that appeared in major marketing journals, such as *Journal of Marketing*, *Journal of Marketing Research*, *Marketing Science*, and *International Journal of Research in Marketing*.

called the takeoff at its start and by slowdown at its termination (Golder & Tellis, 1997; Golder & Tellis, 2004).

In the context of increasing globalization, the challenge facing managers is how to sustain that growth across countries with dramatically varying demand. The strategy depends on answers to the following questions.

(1) Is growth of new products similar or substantially different across countries?
(2) If different, does economics or culture influence the pattern of growth across countries?
(3) What are the implications of the answers to these questions for:
   - the choice of a waterfall (introducing in different countries at different times) versus sprinkler (introducing in all countries at the same time) strategy for new products;
   - global versus local marketing of a new product;
   - managing a firm's expectations about new product growth?

The current study of the sales growth of 10 consumer durables in 16 European countries aims to answer these questions. It advances the literature on international diffusion of new products that Table 1 summarizes.[1]

Most of the articles in this tradition use parameters from the Bass model to study variation across countries. The Bass modeling tradition treats diffusion as an outcome of external (p) and internal (q) influences. These two parameters can then be combined to estimate the speed of diffusion. In their study of the international takeoff of new products, Tellis, Stremersch, and Yin (2003) use a different approach, grounded in affordability theory (Golder & Tellis, 1997; Golder & Tellis, 2004). The underlying premise of the theory is that the changing affordability of a new product, as its price declines over time, determines the speed and growth in its sales (Tellis & Golder, 2001). The key measure that they use is the time to takeoff in sales of the new product. However, takeoff is followed by strong growth in new product sales. None of the prior studies has addressed the international pattern and drivers of duration and rate of the growth in new product sales that follows takeoff. This is an important void for several reasons.

First, cross-country variation in growth may differ from cross-country variation in time to takeoff. Second, would culture or economics be the primary explanation for such cross-country variations in growth? Third, if economics rather than culture explains these differences, then how would one reconcile that with culture being the primary driver of inter-country differences in time to takeoff?

The current paper makes three contributions to the literature. First, it proposes two new, direct, and fruitful operationalizations of growth: duration of growth and rate of growth during the growth stage of the product life cycle. Second, it reconciles the alternate explanations (culture and economics) for inter-country differences in growth and time to takeoff. Third, it provides implications on how to manage new product growth across countries.

This paper is organized as follows. The next section presents the theoretical background and our research hypotheses. The third section discusses our data. The fourth section presents the empirical results. The fifth section discusses our findings, and considers the study's limitations and implications for marketing management and future research.

2. Why growth varies: theory and hypotheses

This section explores the reasons why the growth of new products may vary across countries. Our focal criterion variable throughout is growth. However, we can measure the growth of new products by two indices: (1) the average rate of growth during the growth stage; and (2) the duration of the growth stage.

The two indices of growth may be related to each other if market penetration is held constant. A high growth rate will imply a short growth stage and vice

[1] Note that this literature (including the present study) focuses on the growth of a new product category and not the sales growth of a particular retail chain (Gielens & Dekimpe, 2001) or of a particular brand (Parker & Gatignon, 1994; Shankar, Carpenter, & Krishnamurthi, 1998).

versa.[2] In the interest of parsimony, we will discuss the theory and hypotheses with respect to the growth rate only. Because of the negative relationship between the two indices, we expect the logic and hypotheses to reverse for the duration of the growth stage. Nevertheless, since the two indices are not necessarily equivalent, our empirical analysis will explore the effects of the causal variables on each index. This exercise increases the validity of the tests and the reliability of our conclusions.

To explain variation in growth rates across countries, we include two sets of predictors, (1) economics and (2) culture of the country. We discuss each in turn.

2.1. Economics

Economic theory suggests that two factors may be pertinent to how new products grow across countries: economic wealth and income inequality. We next explore the effects of these two factors on the growth rate of new products across countries.

2.1.1. Economic wealth

Economic wealth refers to the average wealth of the people of a country. Wealth determines to what extent the population at large can afford to buy new products. Indeed, a general finding in adoption research is that high-income consumers are generally the first to adopt a new product (Rogers, 1995). The reason is that wealthier consumers can better afford a new product than poorer people can, especially early in its life cycle when it is still priced highly. Wealthier consumers can also better afford the risk of adopting a new product earlier than poorer consumers (Dickerson & Gentry, 1983). In addition, wealthier countries often have better media infrastructures. Consequently, consumers can be more easily informed (Beal & Rogers, 1960) and convinced (Katz & Lazarsfeld, 1955) of the benefits of the new product. Also consumers may learn of the adoption and satisfaction of other consumers more rapidly. Therefore, we expect higher growth in wealthy countries, as compared to poor countries. Thus, we hypothesize:

H1. New products grow faster in wealthy countries than in poor countries.

2.1.2. Income inequality

In addition to the average wealth of a population, the distribution of wealth or income may also affect the growth of new products. Even if a country is wealthy, uneven income distribution may imply that many segments fall below the threshold to buy a new product. As a result, in such countries, new products may remain unaffordable for large parts of the population causing sluggish growth. So, we hypothesize:

H2. New products grow slower in countries with high income inequality than in countries with low income inequality.

2.2. Culture

Culture is the collective programming of the mind that distinguishes the members of one human group from another. Although we can, in principle, use the word culture for any social group, here, we reserve it for societies or countries. Prior research suggests that distinct cultural traits underlie systematic differences in consumer behavior (de Mooij & Hofstede, 2002; Lynn, Zinkhan, & Harris, 1993; Steenkamp, 2001), especially differences in response to new products (Jain & Maesincee, 1998; Steenkamp, ter Hofstede, & Wedel, 1999; Yeniyurt & Townsend, 2003). We focus on three dimensions of culture that have been found to be relevant to potential differences in new product growth, namely uncertainty avoidance, masculinity and religion.

[2] Such a strict relationship is only valid when ultimate penetration levels at maturity do not differ across countries. When this is not the case, it can be that growth duration is short and growth rates are low, as the category fizzles out and fails to achieve enough penetration in a country. In our sample of countries, we find no significant differences across countries in ultimate penetration level that are consistent across categories. We also find empirically that growth duration and growth rate are negatively related. The median and average correlation between the two measures across product categories within countries is −0.46 and −0.22, respectively. The median and average correlation between the two measures across countries within product categories is −0.44 and −0.37, respectively. Thus, for the sake of brevity, we will treat growth duration and growth rate as negatively related to each other, and the empirical analysis shows this to be a valid perspective for our sample of countries.

2.2.1. Uncertainty avoidance

Uncertainty avoidance refers to the extent to which the members of a culture feel threatened by uncertain or unknown situations (Hofstede, 2001). In uncertainty avoidant cultures, risk taking is limited to known risks (of which the probability is known), while in cultures low in uncertainty avoidance, risk taking includes unknown risks (of which the probability is not known). Uncertainty avoidant cultures are extremely conservative, in which people generally resist change (Hofstede, 1980). As new products involve change not only in the material realm but also in people's attitudes and behaviors, one can expect cultures high on uncertainty avoidance to show low innovativeness and thus slower growth. Therefore, we hypothesize:

H3a. New products grow slower in countries high in uncertainty avoidance than in countries low in uncertainty avoidance.

However, uncertainty avoidance may not only affect intrinsic innovativeness of a culture, but it may also affect the extent to which it is important for members of a culture to learn from one another. Non-adopters can learn of a new product's features by observing other people's adoption of a new product and interacting with them. This behavior reduces non-adopters' uncertainty and triggers their adoption of the new product. Such uncertainty reduction is more important for uncertainty avoidant cultures than for cultures low in uncertainty avoidance. Therefore, one would expect that members of the former cultures are more influenced by prior adopters than members of the latter culture (Van den Bulte & Stremersch, 2004). This leads to a faster diffusion and thus faster growth of the new product in an uncertainty avoidant country as compared to a country low in uncertainty avoidance. This leads to an alternative hypothesis:

H3b. New products grow faster in countries high in uncertainty avoidance than in countries low in uncertainty avoidance.

2.2.2. Masculinity

Masculinity refers to the sex role pattern in social groups whether it is characterized by male (e.g., assertive) or female (e.g., nurturing) attributes. Masculinity is a value system shared especially by the majority of the people in the middle class of a society (Hofstede, 1980). In masculine societies, people are more materialistic and admire successful achievers (Hofstede, 1983). In such societies, consumers may autonomously adopt new products faster, since it allows them to show off achievement, and thus these countries experience faster new product growth. Also, display of status is more important in masculine societies and as new products may be accepted out of status considerations (Van den Bulte & Stremersch, 2004), masculine societies may adopt new products faster and thus again show faster growth. Therefore, we hypothesize:

H4. New products grow faster in masculine countries than in feminine countries.

2.2.3. Religion

The religion of a society is a cultural trait that may have substantial effects on the growth of new products in a country (e.g., Tellis et al., 2003). In the Western European countries—the context of the present study—the main religious faiths are Catholicism and Protestantism. There is evidence in sociology that Protestant religions are more supportive of a high need for achievement than is the Catholic faith (McClelland, 1961; Weber, 1958). A high need for achievement makes people value effectiveness and efficiency highly. New consumer durables make work in the home more efficient and effective. Thus, a higher need for achievement will encourage people to adopt new consumer durables faster. Thus, we hypothesize:

H5. New products grow faster in countries with a larger proportion of Protestants than those with a smaller proportion of Protestants.

2.3. Other variables

Though they are not of main interest to us, we also control for three other variables. A first control variable is the product class, whether the product is a brown or white good. Brown goods are electronic goods such as TVs and digital cameras, and white goods are kitchen and laundry appliances. Brown goods typically are more glamorous and appealing than white goods because they are more visible, enjoyed by all members of the household, and more frequently discussed in social circles, than are white goods. So, we expect that brown goods will have higher growth rates than white goods. A second control variable is lagged market penetration. We expect that as products reach a higher market penetration, they grow more slowly.

A third control variable is the lag with which the product is introduced in a country. We expect that the later a product is introduced in a country—compared to the lead country—the faster it will grow relative to countries with early introduction. This expectation can be supported through several arguments. First, manufacturing and marketing expenses fall at a constant rate the more experience suppliers have accumulated. In the presence of competition, typical of most consumer products, prices tend to fall at a similar constant rate. A large number of studies support this thesis (for a recent overview, see Argote, 1999). Therefore, lags in introduction of a new product in a particular country can be seen as an advantage for growth of that product in that country. However, differences in launch time may also capture other effects, such as changes in purchasing power and household formation rate (Van den Bulte, 2000), knowledge dissemination through reverse engineering or cross-country influences, among others.

3. Data

This section describes our data collection and measures.

3.1. Data collection

This study uses the database of historical data on sales of new consumer durables from Tellis et al. (2003). This database—composed from sources, such as Euromonitor, GfK, The Economist Intelligence Unit, Tablebase, archives and publications of associations of appliance manufacturers and William P. Putsis, Jr.—contains sales data on 10 consumer durables (refrigerator, washing machine, freezer, dishwasher, color TV, dryer, VCR, computer, CD player, and microwave oven) across 16 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK). For our purposes, we had complete data on 114 country–category pairs. Our database covers annual data from the period 1950–2000.

Our key sources of data for the independent variables are the Statistical Yearbook of the United Nations, the Penn World Table, the World Bank Statistics, Eurostat Review, and individual sources, such as Parker (1997) and Hofstede (1980, 2001).

3.2. Measures

This subsection explains the measures for the dependent and independent variables in our model.

3.2.1. Dependent variables

As stated at the beginning of the hypotheses section, our hypotheses relate to two different dependent variables, namely duration of the growth stage (how long does growth last?) and the growth rate during the growth stage (at which rate do sales grow?).

3.2.1.1. Duration of growth stage. The duration of the growth stage of the product life cycle is the time that elapses between takeoff and the end of the growth stage. Takeoff is the start of the growth stage of the life cycle characterized by a rapid growth in sales. To measure takeoff, we adopted the threshold rule developed by Tellis et al. (2003). They define the threshold for takeoff through a standard plot of growth in sales for various levels of market penetration. They operationalize takeoff as the first year a product's growth in sales crosses the threshold. The end of the growth stage is one period before sales slow down (decline). To determine the location of the end of the growth stage, we adopt a rule developed by Golder and Tellis (2004). By this rule, the end of growth is the first year, after takeoff, after which two consecutive years occur with lower sales. To show our measure of the duration of the growth stage, Fig. 1 graphs the sales evolution of microwaves in Germany and the UK from introduction to 1990. We have arrows in a full line to indicate the start of the growth stage (takeoff) and arrows in dotted line to indicate the end of the growth stage (one period before slowdown).

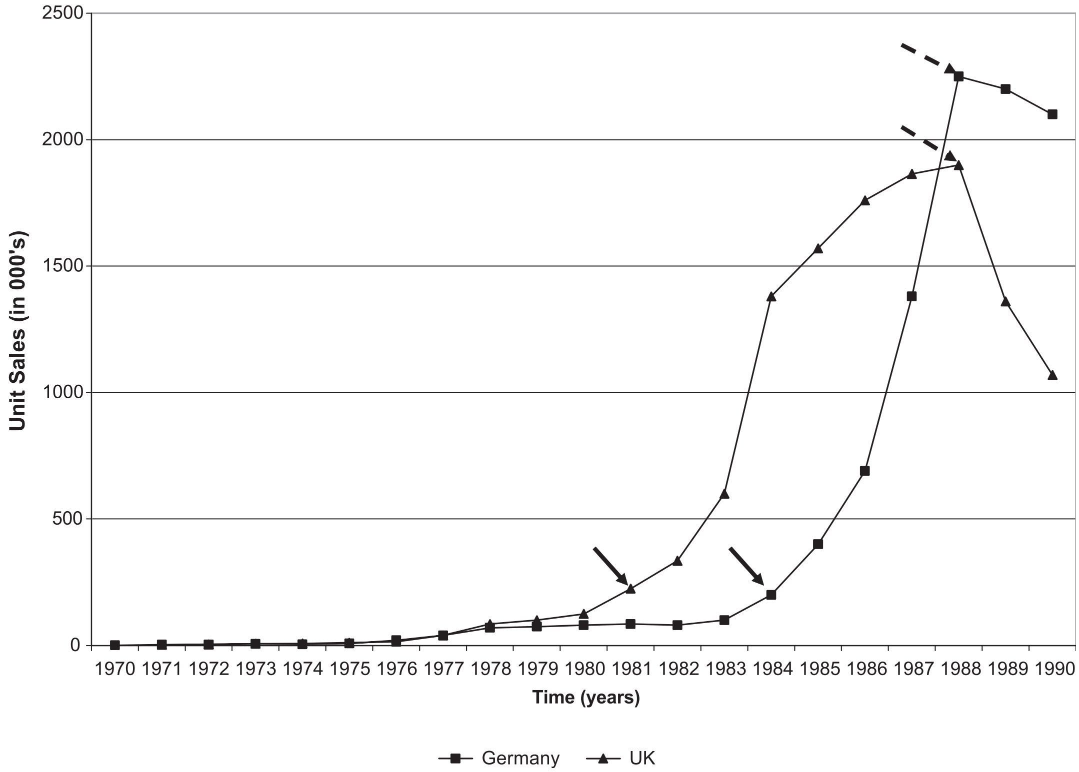


Fig. 1. Sales of microwaves in Germany and the UK.

3.2.1.2. Growth rate during growth stage. With growth rate during the growth stage, we refer to the average growth rate over the growth stage (excluding the year of takeoff). In symbols:

$$GR_{ij} = \frac{1}{T} \sum_{t=1}^{T} \frac{S_{ijt} - S_{ij,t-1}}{S_{ij,t-1}} \quad (1)$$

with GR_{ij} representing growth rate of category i in country j, T the number of periods in the growth stage and S_{ijt} unit sales of category i in country j at time t. This measure of growth rate is independent of model assumptions and more intuitive than the measure developed by Van den Bulte (2000). Ideally, a time-varying growth measure would preserve the information in the data. However, we use an average growth measure for three reasons. First, growth rates are highly volatile over time. As such, fitting any model to the data with time varying growth rates is quite complex and cumbersome. Second, our focus is inter-country differences in growth rate, not variation in growth rates across time. Third, an average growth measure has intuitive appeal and is easy to interpret.

3.2.2. Independent variables

For the cultural variables of uncertainty avoidance and masculinity, we used Hofstede's (1980) measures, as these match the time period covered by our data (post 1950) and provide measures on all countries on which we have data. Readers may refer to the original work of Hofstede (1980) or its most recent edition (Hofstede, 2001). For the cultural variable of Protestantism, we used the percentage of Protestants as provided by Parker (1997).

We measured economic wealth by GDP per capita in thousands of US dollars. We also included real GDP per capita in constant dollars, adjusted for changes in the terms of trade (we used the 1985 international prices for domestic absorption and current prices for exports and imports). This measure gave similar results. We measured income inequality by the GINI Index, as extracted from the World Bank database (Deininger & Squire, 1996). To maximize consistency across countries, we selected the GINI coefficient based on net income, number of households, and national coverage.

We also included several other variables. First, we account for differences between brown and white goods and included the product class as a dummy variable, coded 1 for white goods and 0 for brown goods. Second, for lagged market penetration, we used the lagged average possession of the product by households in the country. Our sources (GfK and Euromonitor) provided us the market penetration for the white goods. For brown goods, we calculated the market penetration as follows:

$$\text{penetration}_t = \text{penetration}_{t-1} + \{(\text{sales}_t - \text{sales}_{t-r}) / (\text{number of households}_t)\}, \quad (2)$$

where r is the estimated average repurchase time for a product in a particular category. The above measure for penetration is a rough proxy as (1) it does not adjust for repeat purchase and may thus overestimate penetration; and (2) the average repurchase time was estimated by us, based on our own judgement, and kept constant over time.[3] Third, we control for the introduction lag, which is the lag with which a new product was introduced in a country as compared to the country it was first introduced in Europe in.[4]

Since the variables in our model include both time-varying and time-invariant variables, we need to point out clearly which variables are of which type.

- Time-varying variables are: lagged market penetration, economic wealth, income inequality.

[3] As average repurchase times during the growth stage, we used 4 years for personal computer, 5 years for CD-Player, 6 years for VCR, and 8 years for color television. Note that these estimates may appear high, as compared to present repurchase rates (in the maturity stage), but credible for repurchase times relatively early on in the product life cycle. Also, our results were not sensitive to changes in these repurchase times.

[4] We also checked empirically whether the lag time versus the original US introduction—for all our products the US was the first country in which the product was introduced in (either alone or simultaneously with other countries)—was an explanation for growth rate and duration (as it may also capture economies of experience). We found that this lag time had no effect and for sake of brevity do not report on it in detail.

Table 2
Means of country characteristics

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	UK
Wealth (GDP per cap; in thousands of US$)[a]	6.68	6.90	8.62	7.38	7.36	6.65	2.63	3.92	5.47	6.80	8.93	2.06	3.65	8.99	10.90	5.79
Income inequality[a]	28.94	30.84	31.06	30.29	31.49	32.62	37.68	37.00	37.01	29.51	34.18	40.31	34.50	31.04	35.99	29.70
Uncertainty avoidance	70	94	23	59	86	65	112	35	75	53	50	104	86	29	58	35
Masculinity	79	54	16	26	43	66	57	68	70	14	8	31	42	5	70	66
Protestantism	0.06	0.00	0.88	0.87	0.02	0.44	0.00	0.03	0.00	0.26	0.88	0.01	0.00	0.79	0.44	0.72

[a] For these variables, the means are given over the period 1951–1994.

Table 3
Correlation matrix

Variables	Means	Growth rate	Growth duration	Product class	Lagged penetration	Introduction lag	Wealth	Income inequality	Uncertainty avoidance	Masculinity
Growth rate	0.41									
Growth duration	9.67	−0.45**								
Product class (1=white; 0=brown)	0.75	−0.26**	0.21*							
Lagged penetration	10.80	−0.13	−0.04	0.30**						
Introduction lag	3.84	−0.04	−0.10	0.38**	0.05					
Wealth (GDP per cap; in thousands of US$)	5.57	0.52**	−0.45**	−0.51**	−0.08	−0.09				
Income inequality	49.73	−0.06	0.05	0.06	−0.04	0.03	−0.09			
Uncertainty avoidance	62.12	−0.14	0.15	0.03	−0.00	0.21*	−0.14	−0.10		
Masculinity	43.26	−0.14	0.19*	−0.00	0.13	−0.03	−0.05	0.10	0.35**	
Protestantism	0.38	0.21*	−0.22*	−0.05	−0.09	−0.18	0.18	−0.10	−0.76**	−0.55**

* $p<0.05$ (two-sided).
** $p<0.01$ (two-sided).

- Time-invariant variables are: product class, introduction lag, uncertainty avoidance, masculinity, Protestantism.

Table 2 presents means of variables by country and Table 3 presents overall means of and correlations between variables.

4. Pattern and drivers of sales growth: empirical results

Recall that the first two goals of this study were to examine the pattern of sales growth across Europe as to: (1) whether there are country-specific differences in the duration and speed of growth across European countries; and (2) if yes, what factors explain these inter-country differences. We first discuss the descriptive statistics that aim to answer the first question. Then we continue with our explanatory analyses on the drivers of inter-country differences.

4.1. Describing the sales growth pattern across Europe

We describe the pattern of sales growth across Europe using the two dependent variables we identified above, duration of growth stage and growth rate. Before we discuss each, we caution the reader that these descriptive analyses are exploratory because they do not control for other influences, such as product category and introduction timing. Also, the standard deviations are fairly large, which is a caveat against strong conclusions, especially on the comparison of individual countries.

4.1.1. Duration of growth stage

We examine the average duration of the growth stage across countries in Table 4a. The duration of the growth stage is the time that elapses between takeoff and slowdown. From this analysis, we may conclude that Nordic countries have relatively shorter growth stages, as compared to other countries (see Table 4a). The average growth stage in Nordic countries (Denmark, Norway, Sweden, and Finland) is about 8 years, which is lower than the average across all countries of about 10 years. Mid-European and Mediterranean countries have comparable durations, since the growth stage lasts little over 10 years for both these country groups.

4.1.2. Growth rate during growth stage

A second interesting metric with which we can examine the pattern of sales growth across Europe is the rate at which sales grow during the growth stage. We calculate the average growth rate of the new products in our sample for each country. To conduct this analysis, we excluded the year of takeoff itself, as growth rates in the takeoff year may be very large and thus may dominate the average. The country ranking

Table 4a
Duration of growth stage across countries (in years)

Country	No. categories	Duration of growth stage	
		Mean	S.D.
Denmark	8	6.5	3.9
Norway	8	7.0	2.3
Netherlands	8	7.1	5.0
UK	9	8.2	3.0
Italy	9	8.4	4.0
Germany	9	9.3	4.4
Finland	8	9.5	5.5
Spain	5	9.8	4.5
Sweden	8	10.1	6.0
France	10	10.4	4.6
Greece	4	10.5	4.4
Austria	7	10.9	9.5
Ireland	5	11.2	9.5
Belgium	8	11.4	5.2
Portugal	4	11.8	5.9
Switzerland	4	13.0	6.0
Average across countries		9.7	4.7
Geographic blocs			
Nordic	32	8.3	4.5
Mid-Europe	50	10.2	4.3
Mediterranean	32	10.2	6.4

Table 4b
Growth rates across countries

Country	No. categories	Growth rate	
		Mean	S.D.
Austria	7	66.3%	109.3
Finland	8	58.2%	45.6
Germany	9	48.4%	55.8
Denmark	8	44.6%	24.3
Sweden	8	43.8%	41.8
UK	9	43.5%	20.0
Italy	9	42.7%	33.6
Netherlands	8	41.7%	24.3
France	10	40.1%	24.9
Greece	4	37.0%	42.5
Norway	8	36.9%	19.1
Spain	5	29.3%	11.4
Switzerland	4	29.2%	19.5
Belgium	8	29.1%	19.5
Ireland	5	19.0%	8.0
Portugal	4	18.2%	10.4
Average across countries		41.1%	23.7
Geographic blocs			
Nordic	32	45.9%	33.8
Mid-Europe	50	41.4%	50.9
Mediterranean	32	36.0%	27.2

is fairly robust to this exclusion, thus the ranking is similar when the takeoff year is not excluded. The results are in Table 4b.

From Table 4b, we can see that the average growth rate in the growth stage of the product life cycle across all countries is equal to 41.1%. Nordic countries (45.9%) generally have the steepest growth during the growth stage, followed by Mid-European (41.4%) and then Mediterranean (36.0%) countries.

4.2. Drivers of the sales growth pattern across countries

We hypothesized on theoretical drivers of the duration of the growth stage and on the rate at which sales grow during the growth stage. We first discuss the models we employ for growth duration and rate after which we turn to the results we obtained.

4.2.1. Models

The most appropriate model for growth duration is a hazard model. Since some of the predictors, as we explained in the Data, are time-varying, we use a parametric hazard model[5] and not a proportional hazard model (Cox, 1972; Jain & Vilcassim, 1991). The duration of growth is modeled through a Weibull specification (monotonic hazard). A technical appendix on the full model specifications is available from the authors upon request. Note that we also estimated a Weibull specification with Gamma heterogeneity to capture unobserved heterogeneity in our estimates. Results from these estimations were very similar to a regular Weibull model. Thus, we opted for the more parsimonious specification without Gamma mixing. We also examined the robustness of our assumption of a Weibull distribution by estimating other hazard models with other baseline distributions (such as the Log-logistic and Gamma) and found our results to be robust to the choice of the baseline.

To model the growth rate across countries, we use a traditional linear regression model, with the same set

[5] Note that our model (also see the appendix) is a continuous time hazard model, while our data are strictly speaking discrete time data. However, prior research has shown that "…the discrete-time method…will virtually always give results that are quite similar to the continuous time methods…" (Allison, 1984, p. 22).

of independent variables as in the hazard model for growth duration.[6]

To illustrate robustness, we specify four different models for both growth duration and growth rate (see Table 5). The first model only includes the control variables, product class, lagged penetration and introduction lag. The second model includes the control variables and the economic variables. The third model includes the control variables and the culture variables. The fourth model includes all variables.

4.2.2. Results

The results are in Table 5. Note that for the hazard model, positive β coefficients increase duration of growth and negative β coefficients decrease duration of growth, while for the OLS model, positive β coefficients increase growth rate and negative β coefficients decrease growth rate. For each model specification, we provide the parameter estimates with standard errors in-between brackets, the number of observations included, and fit statistics (LL and AIC for the hazard model; R-squared and adjusted R-squared for the OLS model). For the OLS model, we report standardized coefficients. For the hazard model, Table 5 reports unstandardized coefficients, while in the text in-between brackets, we also report the change in the hazard ratio—denoted as Δ—associated with each independent variable. The change in hazard ratio represents the percentage change in the hazard ratio given a one-unit change in the independent variable. This value is equal to $100\times(e^{-\beta}-1)$ (see Tellis et al., 2003). We next discuss our findings per set of variables.

The first hazard and OLS model only includes the control variables, product class, lagged penetration, and introduction lag. We find that lagged penetration has no influence, introduction lag has a limited influence, which is not robust to model specification, while white goods have longer growth stages than brown goods (β_{CLASS}=0.46 with p<0.01; Δ_{CLASS}=−36.9) and grow at a slower rate (β_{CLASS}=−0.27). Therefore, we can conclude that brown goods grow faster and have shorter growth durations than white goods.

The second hazard and OLS models show that, as hypothesized in H1, economic wealth affects both growth duration (β_{GDP}=−0.03; with p<0.01; Δ_{GDP}=3.00) and growth rate (β_{GDP}=0.53; with p<0.01). Income inequality affects neither growth rate nor duration. Thus, we conclude that consistent with H1, economic wealth negatively affects growth duration and positively affects growth rate, while income inequality does not have a significant effect on growth duration nor growth rate, in contrast to H2.

The third hazard and OLS models show that culture does not have an effect on growth duration and growth rate. Therefore, we conclude that culture consistently does not have an effect on growth duration and growth rate, in contrast to H3a, H3b, H4, and H5.

The fourth hazard and OLS models include all variables. These full models mostly confirm our findings from the nested models. Note that none of the full or nested models suffers from harmful multicollinearity, as the highest condition index is equal to 3.5, which is much lower than the threshold value of 30, recommended by Belsley, Kuh, and Welsh (1980).

All these results allow us to formulate one overall conclusion: Economic wealth has a strong and negative effect on growth duration and a strong and positive effect on growth rate, while culture and income inequality do not play a significant role.

4.2.3. Further analyses

We find strong support for our expectations regarding economic wealth. However, our theoretical prediction was based on two arguments: (1) affordability; and (2) availability of media infrastructure. To examine which of the two drives our results, we estimated an additional model that included a media infrastructure variable, which was an index of the number of TVs, radios and newspapers in a country. When this variable was included in the model, we found that it was significant in the regression analysis, but insignificant in the hazard analysis. In both models, its inclusion lowered the significance of the effect of economic wealth slightly, while it did remain significant. This analysis provides some (albeit incomplete) evidence that both theoretical mecha-

[6] For this analysis, we averaged the time-varying independent variables over the growth stage.

Table 5
Drivers of growth duration and rate

	Hazard 1	OLS 1	Hazard 2	OLS 2	Hazard 3	OLS 3	Hazard 4	OLS 4
Control								
Product class	0.46***	−0.27***	0.30*	0.04	0.46***	−0.28***	0.30**	0.02
	(0.12)	(0.10)	(0.16)	(0.11)	(0.13)	(0.10)	(0.15)	(0.11)
Lagged penetration	−0.00	−0.05	−0.01	−0.10	−0.00	−0.03	−0.00	−0.08
	(0.00)	(0.10)	(0.00)	(0.09)	(0.00)	(0.10)	(0.00)	(0.09)
Introduction lag	−0.03**	0.07	−0.03*	0.00	−0.03**	0.11	−0.03	0.02
	(0.02)	(0.10)	(0.02)	(0.09)	(0.02)	(0.10)	(0.02)	(0.09)
Economics								
Wealth (GDP per cap; in thousands of US$)			−0.03***	0.53***			−0.03***	0.51***
			(0.01)	(0.10)			(0.01)	(0.10)
Income inequality			0.01	−0.01			0.01	0.00
			(0.02)	(0.08)			(0.23)	(0.09)
Culture								
Uncertainty avoidance (in hundreds)					−0.03	0.02	0.10	0.03
					(0.30)	(0.14)	(0.36)	(0.13)
Masculinity (in hundreds)					0.22	−0.02	0.44	−0.05
					(0.23)	(0.11)	(0.29)	(0.10)
Protestantism					−0.24	0.22	−0.05	0.11
					(0.23)	(0.16)	(0.28)	(0.15)
Constant	2.17***	0.00	2.27***	0.00	2.19***	0.00	2.09**	0.00
	(0.12)	(0.09)	(0.79)	(0.08)	(0.33)	(0.09)	(0.89)	(0.08)
σ	0.47***		0.57***		0.45***		0.54***	
N	1094	113	1094	113	1094	113	1094	113
LL (AIC)	−331.30		−325.04		−327.44		−321.78	
	(672.60)		(664.08)		(670.88)		(663.56)	
R-squared (adjusted R-squared)		0.07		0.28		0.12		0.29
		(0.05)		(0.24)		(0.07)		(0.24)

* $p<0.1$ (two-sided tests).
** $p<0.05$ (two-sided tests).
*** $p<0.01$ (two-sided tests).

nisms—affordability and media infrastructure—may explain the effect of wealth on growth.

Second, we only included two of the four Hofstede dimensions of national culture. To examine post hoc whether this choice has affected our conclusions, we estimated a model that included all four Hofstede dimensions (in addition to the other variables in our full model 4). In this model, all four cultural dimensions were insignificant, while economic wealth remained strongly significant ($p<0.01$). To check if this finding is an artifact of the Hofstede framework, we ran all models with the cultural dimensions of Schwartz instead of those of Hofstede (see Schwartz, 1994). We find that none of the Schwartz dimensions significantly affect either the duration or rate of growth, while the effect of economic wealth again is strongly significant.

5. Discussion

5.1. Findings

Our findings have answered two of the research questions posed at the outset of this paper. First, we questioned if the pattern of the growth of new products differed across countries? We found that there are strong differences across countries in both growth rate and growth duration. This findings has never been reported before. It complements past findings about strong differences across European countries in the Bass diffusion parameters (Gatignon, Eliashberg, & Robertson, 1989) and time to takeoff (Tellis et al., 2003). However, we also found that differences among geographic regions—Nordic (Sweden, Denmark, Norway, and Finland), Mid-European and Mediterranean—are relatively small, especially in growth duration. This finding is also new and complements past research that has found very strong differences across these regions in time to takeoff (Tellis et al., 2003).

Second, we questioned if economics or culture explained the differences in the pattern of growth across countries. We found that economic wealth primarily explains the inter-country pattern of growth. Culture does so to a far lesser extent than economic wealth. This is exactly the opposite of the findings of Tellis et al. (2003) who found that culture explains time to takeoff across countries better than economic wealth. We theorize that the reason for these contradicting results is that takeoff is a phenomenon very early in the product life cycle, typically below 2–3% market penetration. On the other hand, growth is later in the product life cycle, somewhere between 3% and 35% market penetration (Mahajan et al., 1990). In the classical adoption terminology (Rogers, 1995), innovative consumers that adopt before takeoff may be especially driven by cultural factors, while early adopters and early majority may be more driven by affordability concerns. Therefore, international takeoff patterns may be predominantly driven by cultural traits of countries, while international growth patterns may be predominantly driven by the economic wealth of countries. Indeed, our results seem to complement those of Talukdar, Sudhir, and Ainslie (2002), who also found a strong effect of economics on diffusion patterns. Thus, our explanation helps to reconcile contradictions in prior work in this area.

5.2. Managerial implications of findings

At the outset of this paper, we also formulated three research questions relating to the management of new product growth: (1) the choice of a waterfall versus sprinkler strategy for new product introduction; (2) the global versus local marketing of a new product; and (3) managing expectations on new product growth. We discuss each in turn.

5.2.1. Choice of waterfall versus sprinkler strategy

A sprinkler strategy is one in which a firm introduces in all countries at the same time. A waterfall strategy is one in which a firm introduces in different countries at different times. The rationale for each is the following:

- There are two advantages for a sprinkler strategy. First, a sprinkler strategy can maximize revenues by fully exploiting economies of scale and experience in R&D and manufacturing. It does so by exposing the new product to a maximum number of markets as soon as possible, thus tapping the widest possible scale of operation from the outset. Second, if competition is a threat, then a sprinkler strategy may pre-empt competitive moves in at least some countries, thus maximizing share of market.
- There are two key advantages of a waterfall strategy. First, launching a new product requires investments in manufacturing, inventory, advertising, distribution, sales force, and staff. A waterfall strategy requires a much lower investment than a sprinkler strategy, because the new product is introduced in only a subset of countries. If the product fails in those countries, a manager need not launch in the remaining countries, thus surely saving the investment in the latter countries. Second, because revenues and profits from an early market can be used for investment in a subsequent market, a waterfall strategy also greatly lowers the pressure on cash flow relative to a sprinkler strategy. Now, for any new product, the outcome is uncertain, both in terms of annual sales and ultimate success. Therefore, the lower startup investment and the lower pressure on cash flow translates into lower risk in a waterfall strategy than in a sprinkler strategy. In Europe, one can think of two possible waterfall strategies, one (the Current Waterfall, as that is what companies currently do) of introducing in the large countries first (see Putsis, Balasubramanian, Kaplan, & Sen, 1997) and one (the North-to-South Waterfall) of introducing first in the Nordic countries, then in the Mid-European countries and finally in the Mediterranean countries (see Tellis et al., 2003).

Thus, the essential tradeoff between these introduction strategies boils down to one between maximizing revenues and minimizing risk. The literature (Kalish, Mahajan, & Muller, 1995; Putsis et al., 1997; Tellis et al., 2003) is unclear about which strategy is optimal. Through a simulation that uses the results of the present study and those of Tellis et al. (2003), one can predict what the levels of sales and risk would be for each year from introduction, for any possible introduction strategy. Details from this simulation are available from the authors as a technical note. Here, we only briefly outline the logic and the intuition of a few results (applied to the Freezer category).

The first part of Fig. 2 shows the evolution of the sales level. As our arguments above indicate, the market size effect of a sprinkler strategy clearly dominates the positive—but small—cross-country learning effect and thus generates more sales. The second part of Fig. 2 shows a risk index for companies under the three strategies. We define this risk index[7] as the product of investments in manufacturing and the standardized variance in sales for each year from introduction. We compute the variance in sales for each year from introduction, as the variance in sales for all similar categories, at that year, in all countries in which the target category would be introduced. Fig. 2 shows that, while the sprinkler strategy generates more sales, it also incurs more risk than the waterfall strategy. A North-to-South waterfall involves the least risk. Analysis of the results suggests two reasons for this low risk. First, investments are limited to a constrained set of small (Nordic) countries, involving smaller investments and lower variance. Second, the expansion to other (larger and higher variance) countries is spread over a long period of time.

This framework shows that the tradeoff between a waterfall and sprinkler strategy reduces to a tradeoff between sales maximization and risk minimization. In our consultations with researchers and managers, we find that researchers tend to favor a rapid deployment across all countries to maximize sales and market share. However, managers are deeply concerned about the risk of failure. They have no certainty of the success of their new products, especially early on. Even if they are convinced that the new product will succeed, they remain uncertain of the dates of takeoff and the rate of growth.

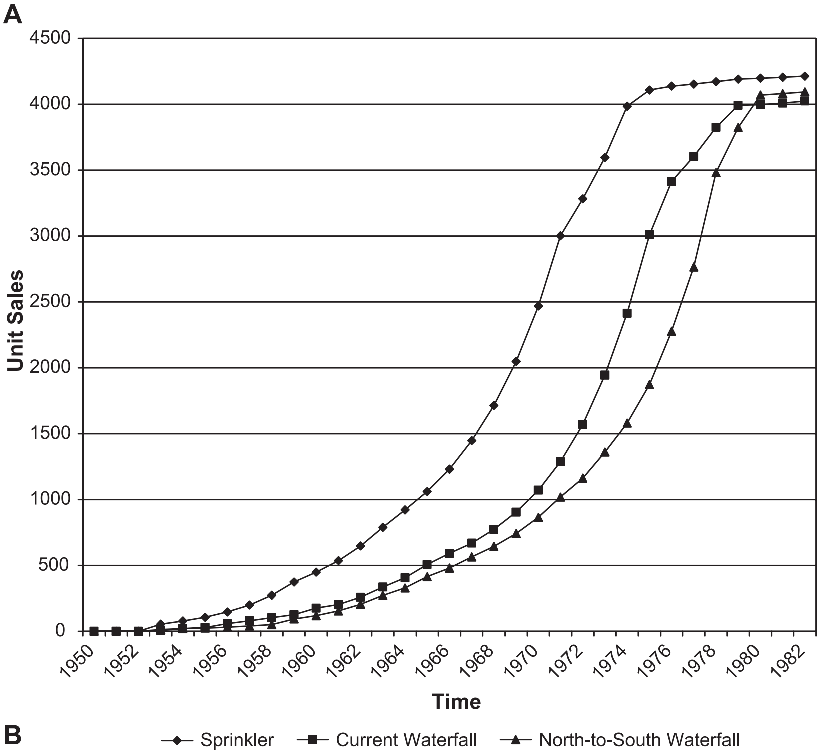
5.2.2. Global versus local marketing of a new product

Our results show that there are dramatic differences across countries in the growth pattern of new products. This is a strong argument in favor of localized marketing strategies. It seems obvious that when countries are in different stages of the product life cycle (introduction–growth–maturity) and experience different growth rates, they need a different market approach. For instance, in the introduction stage, investments may be rather limited and targeted towards informing consumers of the new product and entice innovators to try it out. However, in the growth stage, firms have to gear up for a larger market that is looming and have to target the mass market. Global marketing strategies would ignore such inter-country differences and thus may be suboptimal. The least we would expect global companies to do—should they wish to maintain standardized marketing strategies across the globe—is to adjust the actual calendar time in which the strategy is deployed to the stage of the life cycle the new product is in a specific country.

5.2.3. Managing expectations on new product growth

The many descriptive statistics we offer in this paper also allow managers to set their expectations at a more realistic level. From our own experiences, often, managers underestimate the time it will take for a product to take off, after which they overestimate the time at which sales will start to slow down. This paper gives managers in consumer electronics and household appliances sound expectations as to what sales pattern to expect of new consumer durables. Managers that have more realistic expectations can be expected to make better decisions.

[7] Our risk index, in symbols is: $\text{Risk}_{kt}=\text{inv}_{kt}\times\text{var}(S_{ijkt})/\text{mean}(S_{ijkt})$; in which Risk_{kt} represents the risk in time period t (t=1,. . .,T) in scenario k (k="sprinkler", "current waterfall", "North-to-South waterfall"); inv_{kt} represents the investments in time period t and in scenario k; var(S_{ijkt}) and mean(S_{ijkt}) represent the variance and mean, respectively, of sales across other categories i and countries j, under scenario k, in time period t. Our risk index thus accounts both for the magnitude of investments and for the variability of sales. While the former accounts for the total cost in the event of unused capacity (e.g., because of withdrawal of the new product), the latter accounts for the probability of this event occurring.



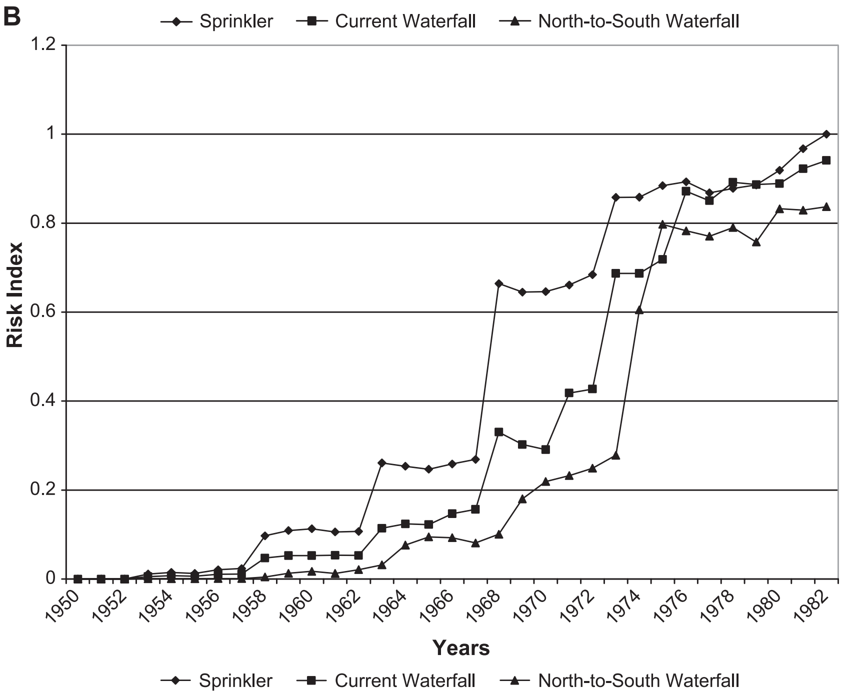


Fig. 2. (A) Unit sales comparison across the scenarios: freezers. (B) Risk comparison across the scenarios: freezers.

5.3. Limitations and future research

This study has several limitations. First, we studied growth in only the growth stage of the product life cycle. It may be fruitful to explore if the patterns and drivers of growth differ across all stages of the product life cycle (e.g., the saddle as in Goldenberg, Libai, & Muller, 2002). Second, we have some measures that are limited, while we do not have measures for some other important variables, such as regulation. Third, we separately estimated both models (growth duration and growth rate), although one may assume that they are interdependent. Fourth, we do not account for differences across countries in ultimate market penetration levels. We also only included successful products—products that in the end got adopted by the mass market—in our analysis. Fifth, we did not explore how the concepts in this paper—takeoff, growth, and slowdown—can be related to the Bass diffusion model parameters. Many of these limitations may suggest fruitful avenues for future research.

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References

Allison, P. D. (1984). *Event history analysis: Regression for longitudinal event data*. Newbury Park, CA: Sage Publications.

Argote, L. (1999). *Organizational learning: Creating, retaining and transferring knowledge*. Boston, MA: Kluwer.

Beal, G. M., & Rogers, E. M. (1960). The adoption of two farm practices in a central Iowa community, Ames, Iowa agricultural and home economics experiment station. *Special Report,* 26.

Belsley, D., Kuh, E., & Welsh, R. E. (1980). *Regression diagnostics*. New York: John Wiley & Sons.

Cox, D. R. (1972). Regression models and life-tables. *Journal of the Royal Statistical Society. Series B*, *34*, 187–200.

de Mooij, M., & Hofstede, G. (2002). Convergence and divergence in consumer behaviour: Implications for international retailing. *Journal of Retailing*, *78*, 61–69.

Dekimpe, M. G., Parker, P. M., & Sarvary, M. (2000). Global diffusion of technological innovations: A coupled hazard approach. *Journal of Marketing Research*, *37*(February), 47–59.

Deininger, K., & Squire, L. (1996). Measuring income inequality: A new database. Available at: http://www.worldbank.org/research/growth/dddeisqu.htm

Dickerson, M. D., & Gentry, J. W. (1983). Characteristics of adopters and non-adopters of home computers. *Journal of Consumer Research*, *10*, 225–235.

Gatignon, H., Eliashberg, J., & Robertson, T. S. (1989). Modeling multinational diffusion patterns: An efficient methodology. *Marketing Science*, *8*(3), 231–247.

Gielens, K., & Dekimpe, M. G. (2001). Do international entry decisions of retail chains matter in the long run? *International Journal of Research in Marketing*, *18*, 235–259.

Goldenberg, J., Libai, B., & Muller, E. (2002). Riding the saddle: How cross-market communication can create a major slump in sales. *Journal of Marketing*, *66*(2), 1–16.

Golder, P. N., & Tellis, G. J. (1997). Will it ever fly? Modeling the takeoff of really new consumer durables. *Marketing Science*, *16*(3), 256–270.

Golder, P. N., & Tellis, G. J. (2004). Growing, growing, gone: Cascades, diffusion, and turning points in the product life cycle. *Marketing Science*, *23*(2), 207–218.

Helsen, K., Jedidi, K., & DeSarbo, W. S. (1993). A new approach to country segmentation utilizing multinational diffusion patterns. *Journal of Marketing*, *57*(October), 60–71.

Hofstede, G. (1980). *Culture's consequences*. Beverly Hills, CA: Sage.

Hofstede, G. (1983). National cultures in four dimensions: A research-based theory of cultural differences among nations. *International Studies of Management & Organization*, *13*(1–2), 46–74.

Hofstede, G. (2001). *Culture's consequences* (2nd ed.). Beverly Hills, CA: Sage.

Jain, D. C., & Maesincee, S. (1998). Cultural influence on new product acceptance in global markets. Working paper, Northwestern University.

Jain, D. C., & Vilcassim, N. J. (1991). Investigating household purchase timing decisions: A conditional hazard function approach. *Marketing Science*, *10*(1), 1–23.

Kalish, S., Mahajan, V., & Muller, E. (1995). Waterfall and sprinkler new product strategies in competitive global markets. *International Journal of Research in Marketing*, *12*, 105–119.

Katz, E., & Lazarsfeld, P. F. (1955). *Personal influence: The part played by people in the flow of mass communications*. New York, NY: The Free Press.

Kumar, V., & Krishnan, T. V. (2002). Multinational diffusion models: An alternative framework. *Marketing Science*, *21*(3), 318–330.

Lynn, M., Zinkhan, G. M., & Harris, J. (1993). Consumer tipping: A cross-country study. *Journal of Consumer Research*, *20* (December), 478–488.

Mahajan, V., Muller, E., & Bass, F. M. (1990). New product diffusion models in marketing: A review and direction for research. *Journal of Marketing*, *54*(1), 1–26.

McClelland, D. C. (1961). *The achieving society*. New York, NY: The Free Press.

Parker, P. M. (1997). *National cultures of the world: A statistical reference*. Westport, CN: Greenwood Press.

Parker, P. M., & Gatignon, H. (1994). Specifying competitive effects in diffusion models: An empirical analysis. *International Journal of Research in Marketing*, *11*, 17–39.

Putsis, W. P., Jr., Balasubramanian, S., Kaplan, E. H., & Sen, S. K. (1997). Mixing behavior in cross-country diffusion. *Marketing Science*, *16*(4), 354–369.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York, NY: The Free Press.

Schwartz, S. H. (1994). Beyond individualism/collectivism: New cultural dimensions of values. In U. Kim, H. C. Triandis, C. Kagitcibasi, S. -C. Choi, & G. Yoon (Eds.), *Individualism and collectivism: Theory, method and applications* (pp. 85–119). Thousand Oaks, CA: Sage Publications.

Shankar, V., Carpenter, G. S., & Krishnamurthi, L. (1998). Late mover advantage: How innovative late entrants outsell pioneers. *Journal of Marketing Research*, *35*, 54–70 (February).

Steenkamp, J.-B.E.M. (2001). The role of national culture in international marketing research. *International Marketing Review*, *18*(1), 30–44.

Steenkamp, J. -B. E. M., ter Hofstede, F., & Wedel, M. (1999). A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *Journal of Marketing*, *63*(April), 55–69.

Takada, H., & Jain, D. C. (1991). Cross-national analysis of diffusion of consumer durable goods in Pacific Rim countries. *Journal of Marketing*, *55*(April), 48–54.

Talukdar, D., Sudhir, K., & Ainslie, A. (2002). Investigating new product diffusion across products and countries. *Marketing Science*, *21*(1), 97–114.

Tellis, G. J., & Golder, P. N. (2001). *Will and vision: How latecomers grow to dominate markets*. New York: McGraw Hill.

Tellis, G. J., Stremersch, S., & Yin, E. (2003). The international takeoff of new products: Economics, culture, and country innovativeness. *Marketing Science*, *22*(2), 188–208.

Van den Bulte, C. (2000). New product diffusion acceleration: Measurement and analysis. *Marketing Science*, *19*(4), 366–380.

Van den Bulte, C., & Stremersch, S. (2004). Social contagion and income heterogeneity in new product diffusion: A meta-analytic test. *Marketing Science*, *23*(4).

Weber, M. (1958). The Protestant ethic and the spirit of capitalism. New York, NY: Charles Scribner's Sons.

Yeniyurt, S., & Townsend, J. D. (2003). Does culture explain acceptance of new products in a country? An empirical investigation. *International Marketing Review*, *20*(4), 377–396.