Received 17 December 2012
Revised 23 April 2013,
6 July 2013
Accepted 9 August 2013

Resource curse or destructive creation in transition

Evidence from Vietnam's corporate sector

Quan Hoang Vuong
Centre Emile Bernheim, Université Libre de Bruxelles, Brussels, Belgium, and
Nancy K. Napier
College of Business and Economics, Boise State University, Boise, Idaho, USA

Abstract

Purpose – The purpose of this paper is to explore the "resource curse" problem as a counter-example of creative performance and innovation by examining reliance on capital and physical resources, showing the gap between expectations and ex-post actual performance that became clearer under conditions of economic turmoil.

Design/methodology/approach – The analysis uses logistic regressions with dichotomous response and predictor variables on structured tables of count data, representing firm performance as an outcome of capital resources, physical resources and innovation where appropriate.

Findings – Key findings relevant to economic and business practice follow. First, a typical characteristic of successful Vietnamese firms in the transition period is their reliance on either capital resources or physical asset endowments. Second, poor performers exhibit evidence of over-reliance on both capital and physical assets. Third, firms that relied on both types of resources tended to downplay creative performance. Some evidence suggests that firms face more acute problem caused by the law of diminishing returns in troubled times. Fourth, the "innovation factor" has not been tapped as a source of economic growth.

Research limitations/implications – This study has some limitations. The size of the survey sample is approximately 150 firms, while the potential sample of > 300 should be possible in the future. When the size increases, the research could be expanded to include further variables that will help investigate more deeply into the related issues and business implications. With regard to the implications of the study, the absence of innovations has made the notion of "resource curse" identical to "destructive creation" implemented by ex-ante resource-rich firms, and worsened the problem of resource misallocation in transition turmoil. The Vietnamese corporate sector's addiction to resources may contribute to economic deterioration, through a downward spiral of lower efficiency leading to consumption of more resources.

Practical implications – Insights obtained from this study could save transition economies' resources which have almost always been considered *sine qua non* before any critical major policymaking, while this is not necessarily true, and in many cases, even counterproductive.

Originality/value – Original data set on Vietnam stock market are collected, processed, prepared and used by the authors. Original design by the authors for regression equations with dichotomous predictor variables: dependence on endowed physical assets, reliance on capital resources and significant signs of creative performance/innovations. Original idea of viewing "resource curse" as absence of innovation and due to uncreative "destructive creation" of poor-performing commercial operations by resource-rich firms is used in the paper. We have searched the literature in business research and found that the empirical results have not been previously reported.

Keywords Creative performance, Destructive creation, Physical and capital resources, Rent-seeking, Resource curse

Paper type Research paper

The authors gratefully acknowledge support and assistance from Tran Tri Dung (DHVP Research) and Shanshan Bai (Boise State University).

Management Research Review
Vol. 37 No. 7, 2014
pp. 642-657

2040-8269
DOI 10.1108/MRR-12-2012-0265

Over-investment using credit and equity, together with substantial physical asset endowments, is a typical phenomenon in transition economies, especially those with communist ideology, such as Vietnam and China. In such transition economies, when there is threat to expected growth, the governments often revert to the solution of expanding investments by equity or debt. For example, when Chinese exports fell in the critical period of 2008-2009 from 11 to 5 per cent of gross domestic product (GDP), the Chinese Government reacted by substantially increasing the fixed investment to GDP ratio from 42 to 47 per cent (Roubini, 2011). Vietnam has experienced a similar situation. The higher and increasing incremental capital to output ratio (ICOR), which was around seven-eight in Vietnam in late 2000s (even while typical Southeast Asian economies have ICOR of around three-four), was hardly new. This Vietnamese higher ICOR represents the same propensity to over-invest in the domestic economy, while the induced outputs are not necessarily showing positive changes in productivity and technological innovation (Pham and Vuong, 2009).

In this paper, we explore the effect of organizations' reliance on capital and physical resources in a transition economy, using data from Vietnamese firms. The notion of a "resource curse" (i.e. depending on too many resources after a long period of having too few resources) follows a period of growth and then decline in a country once regarded as the "next tiger" in Southeast Asia. To explore this question, we use Vietnam as an example of many transition economies that go through such a boom/bust cycle and the reactions that organizational leaders often follow, which becomes the resource curse. The research builds on research relating to the notion of resource curse, both for and against, as well as on previous conceptual research on creativity and entrepreneurship (Schumpeter, 1975 [1942]; Napier *et al.*, 2012; Vuong and Napier, 2012). The paper has four main parts:

(1) a brief review of Vietnam's economy and the literature relating to resource curse in economies undergoing transition;

(2) description of the empirical design;

(3) results of the logistic regression; and

(4) discussion and implications.

An economy in transition

Like other transition economies, Vietnam has had sweeping reform, known as "Doi Moi", which began in 1986. The country's economy grew rapidly from 1996-2000 (at 6.9 per cent annual growth of GDP), accelerating to 7.5 per cent per annum in 2001-2005. During this fast growth, it consumed huge capital and physical assets. For instance, official development assistance funding was $15 billion during 2001-2005 alone. In addition, Vietnam attracted an increasing stock of foreign direct investments, which amounted to > 14,000 projects with nearly $210 billion committed by the end of 2012. The flood of foreign aid results in rent-seeking activities where the involvement of politicians in power may lead to misallocation of resources, as well as exclusion of other groups from the political process (Djankov *et al.*, 2005; Ross, 1999). Perhaps the windfall of capital inflows does the same as well. As to the magnitudes, Djankov *et al.* (2005) even statistically prove that "aid is a bigger curse than oil".

The discussion of whether and how a resource curse could influence economic development and growth has existed for many years (Metcalfe and Ramlogan, 2006; Murshed, 2004; Perez, 2012; Ross, 1999; Wright and Czelusta, 2004). They fall, of course,

on both sides of the argument. Some suggest that indeed a notion of "resource curse" can eventually dampen economic growth and development, whether it is the dependence upon natural resources, service-based exports or, as in Vietnam's case, aid money. Others reject the premise that a resource curse is a major impediment.

Since the late 1980s, there has been much research on the link between natural resource wealth and economic development. Despite strong evidence that abundant resource economies perform less well than their scarce resource counterparts, there is little explanation on why this happens (Ross, 1999). Politically, three major explanations exist for the notion of the resource curse:

> Cognitive theories suggest that windfalls produce myopic disorders among policymakers; societal theories argue that windfalls empower social groups that favor growth-impeding fiscal or trade policies; and statistical approaches suggest that windfalls can weaken state institutions that are necessary to foster long-term economic development (Ross, 1999, p. 308).

In addition, Nelson and Nelson (2002) noted a convergence of research on technological advances and cognitive science.

Murshed (2004) suggests that it is "not natural resource(s) *per se* but its type that matters" or affects economic growth and development. Although his work discusses tangible resources, such as oil, minerals and agriculture, its implication can extend to intangible resources, such as innovation and knowledge. Thus, the abundance of resources is not necessarily a curse on the economy, but the type of resources, if abundant, may not only promote economic growth but also sustain it. Wright and Czelusta (2004) argue that "'nonrenewable' resources have been progressively extended through exploration, technological progress and advances in appropriate knowledge".

Metcalfe and Ramlogan (2006) consider innovation as "the application of knowledge to create new productive opportunities to which the reallocation of resources is an adaptive response". In light of this, a "cursed" economy, where resource-based businesses naturally prevent the other players from accessing the capital and physical endowments would deteriorate its competitiveness.

O'Farrill (2012) agrees with historical evidence that if a nation wants to achieve economic development, then it must "go beyond the limits of their static comparative advantage" and "diversify into new activities that belong to the rich countries' area". While the former is interpreted as less dependent on the nation's available resources, the latter refers to innovation capability. In light of this, resource-based expansions of Vietnamese conglomerates, especially the state-owned enterprises (SOEs), may create "bubbles", defined here as dramatic surges of stock and real estate prices in 2007-2009. Unfortunately, the life of those bubbles is short. Since late 2011, state-run economic groups started reporting huge losses and teetered on the edge of bankruptcy. Upper-stratum private corporations experienced the same problems shortly.

In Vietnam's case, one could argue that the premise of the resource curse has emerged. Overtime, Vietnam's emerging economy has appeared inefficient, wasting physical and capital resources as measured by the "Investment-to-GDP" ratio. This ratio has risen over three critical phases: 34.9 per cent (1996-2000) to 39.1 per cent (2001-2005) to 43.5 per cent (2006-2010), meaning the country needed more scarce resources to finance growth. In addition, the economy consumed huge credit amounts. For example, the credit supply in 2010 was 13.7 times that in 2000, while GDP doubled in the same decade. Scarce physical assets (e.g. land, housing, mines) have likewise been used inefficiently by "special interest

groups", including the so called "crony capitalists", who have access to scarce resources and yet yield mediocre performance. The SOEs, for instance, officially borrowed > $60 billion but created a total market equity value of only $33 billion (Vuong, 2012).

Other problems have emerged. Reliance on credit to finance growth has generated high inflation, peaking at 23 per cent in 2008. Monetary policy tightened the market rate for credit to as high as 25 per cent (Pham and Riedel, 2012). Further, from early 2011 to the end of 2012, > 100,000 (mostly private) enterprises declared insolvency or quietly closed operations, accounting for between 15-25 per cent of the enterprise population (Vuong, 2012).

Although monetary policy is critical, we argue that another solution for the Vietnamese economy may be more crucial. Building on long studied ideas of creative destruction (Antonelli, 2000; Dosi *et al.*, 2000; and, Metcalfe and Ramlogan, 2006), and in particular, entrepreneurship and creative performance (Schumpeter, 1975 [1942]; Napier *et al.*, 2012; Vuong *et al.*, 2013), in this paper, then, we expand those ideas empirically. In essence, we question whether the reliance on capital and physical resources will suffice for yielding economic improvement (Vuong, 2007), without equivalent efforts on creative activity and performance.

Dosi *et al.* (2000) differentiated scholarly views on the relation between firm capabilities and strategic management in terms of how scholars consider the role of resources in shaping firms' competitiveness and strategy. For "Resource-based view", scholars argue that possession and development of unique and idiosyncratic resources are a source of firms' profits. They also consider the idiosyncrasy of resource as being weak. In other words, resources are "relatively discrete and separable from the context of the firm and are the sorts of things that would naturally carry a market price" (Dosi *et al.*, 2000, p. 13). In contrast, other scholars (Dierickx and Cool, 1989) suggest that "competitively significant resources are gradually accumulated and shaped within the firm, and are generally non-tradable".

Knowledge-based authors (Dosi and Marengo, 1994; Grant, 1996; and Kogut and Zander, 1992) consider the way a firm "brings knowledge to bear on productive effort" as the "most distinctive role in the economic system". In light of this, if we consider knowledge to be a resource, then a firm that is capable of generating knowledge should be able to dispel the "resource curse".

When revisiting the question "is innovation only for the rich", Perez (2012) is dissatisfied with the old answer that having more resources, such as advanced technology and abundant R&D funds, allows the rich to take advantage of making innovation. Instead, Perez (2012) suggests redefining the question, as the context is changing, especially with the evolution of information and communication technologies (ICT). The weak and the poor, i.e. developing/emerging economies, should be able to make innovation too when they effectively and efficiently use ICT products (possibly produced by the rich) to generate new knowledge.

If there is a resource that enterprises, economies and even societies can heavily rely on with no fear of being cursed, then it is knowledge, rather than information. Metcalfe (2001) points out what he calls "ether problem": that is when knowledge is simply considered to be "in the air and can be 'inhaled at will'" and thus is a public good. We disagree that it is knowledge that can be inhaled at will as a public good! Rather, we agree that information is the public good, as "it is uniformly accessible, available to all without effort or cost". But "turning information into knowledge requires prior knowledge (and beliefs)" (Metcalfe, 2001, p. 12). It is here that other concepts may come

into play, in particular the idea of a three-discipline typology multiple filters process that intently gathers information to produce primary insights, which are then screened through three disciplines (Napier and Vuong, 2013) to arrive at new knowledge.

To accumulate knowledge as an engine of economic growth, Metcalfe (2001) calls on nations to invest in education and research. But he also warns that simple dependence on having discovered knowledge is not enough. Because the market is a key place that appreciates the economic value of knowledge, centrally planned systems, such as China, Vietnam and Cuba, will be at a disadvantage and should facilitate a process of decentralization.

Research methods, data and empirical approach

Metcalfe and Ramlogan's (2006) review of the methodology of measuring the connection between innovation and economic growth highlighted a shift from macro- to micro-data sets. The former (macrodata) was popular in late 1980s. The latter (using more micro-data sets) entered about ten years later when growth of productivity "[could not] be interpreted as a technology construct alone".

For example, Olley and Pakes (1996) used plant-level data from the US telecommunications industry during the period of post-deregulation to identify the relationship between firms reallocating input to more efficient plants, expanding the capacity of those plants and closing less efficient plants for industry productivity growth. They found that improvement in industry performance was linked to reallocation of capital resources, not to increases in plant productivity. The work of Bartelsman and Dhrymes (1998) also reached the same findings. Reallocation of resources to more productive plants contributed about 25 per cent of total factor productivity growth of US manufacturers in three industries – machinery (except electrical); electrical and electronic machinery, equipment and supplies; and measuring, analyzing and controlling instruments – in the period of 1972-1986.

Vuong and Napier (2012) proposed a paradigm for using a disciplined creative process to absorb and use information and insights before making decisions that generate innovations, and may be what the Vietnamese corporate sector and economy appear to miss (Vuong, 2007; Pham and Vuong, 2009). Vietnamese firms, relying more on chance opportunities, have tended to throw scarce capital and physical resources that have little chance of payoff instead of using a careful disciplined creative process gearing toward innovations that produce market values; the waste of resources is understandable, highly likely and often very costly for firms and their stakeholders.

For a clear formulation of the problems at hand, the following logic and causal diagrams are provided and explained.

Logic of investment can be described in a simple diagram as follows:

$$\text{Expenditure (E)} \begin{cases} \rightarrow \text{Innovation (I)} \\ \rightarrow \text{Capital (C)} \\ \rightarrow \text{Assets (A)} \end{cases} \rightarrow \text{Performance (P)}$$

In this description, firms make capital expenditure for one or all purposes of purchasing or accessing capital resources, physical assets and innovation capacity (either technological or managerial capabilities), in the hope for improved performance.

Causal diagram:

In this causal diagram (Figure 1), P represents the sole response variable in our consideration.

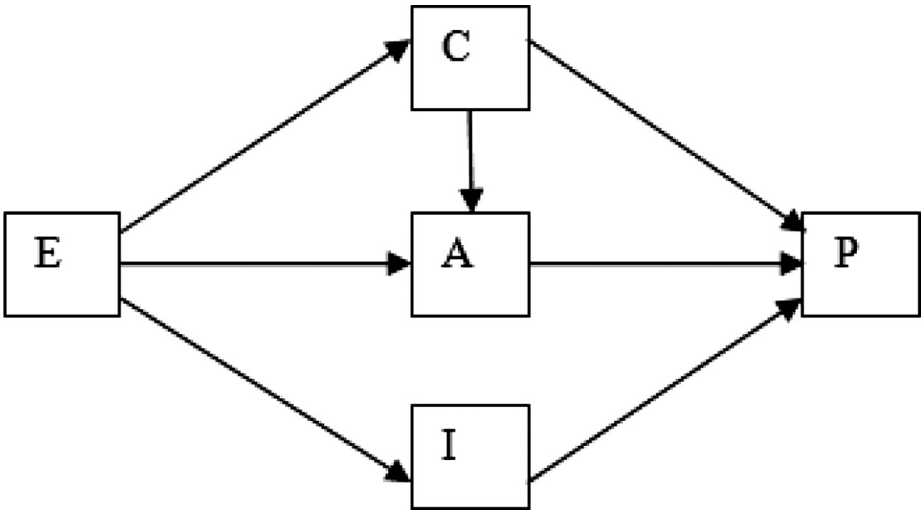

Figure 1.

E has an indirect effect on A through C; and similarly, C has indirect effect on P through A. However, E is outside our main observation and serves as an "endowment". This means effects on P should be examined with the logit form for P with additive C, A and I effects (C + A, C + A + I), and C*A is a possible association explanatory (indicator) variable in the causal diagram. In reality, there is little (or almost zero) chance that a person or an institution could obtain financial or physical assets purely based on the fact that she possesses a new innovation or solution (I). So causal link from I to C or A is not expected in this environment.

In terms of data collection and treatment, a key issue rests with a clear definition of state of performance of enterprises, into which the study attempts to look. Of 154 enterprises for which we obtain data points, their performance outcomes can be grouped into "success" and "failure" in a distinctive manner. Due to the nature of these investments in financial capital and/or physical asset endowment in a rampant rent-seeking setting, it can be observed that their outcomes are either distinctively good or substantially worse.

The actual observations have shown that well-performing firms normally enjoy at least a 25 per cent or higher stock returns over the critical period, and in many circumstances, the capital gains reflected through stock markets could reach even 100 per cent or above. On the other hand, firms with poor performance suffered from substantial losses, mostly in the range of 30-50 per cent in terms of either net profits after taxes or capital gains (if the portfolio investors' view is of primary concern), or in many cases, poor-performing enterprises in our data set have been exposed to the risks of bankruptcies or costly complete restructuring to survive the tough market competition.

In this study, we have explored various models that may be appropriate for such consideration and found that the most useful approach is to conduct a qualitative assessment, using categorical data with all independent variables – which are stated in the logic of investment and causal diagrams to be A, C and I – being indicator variables. The models applicable to this study have been verified to be appropriate and no-nonsense for a smaller data set so long as estimations' results report somewhat decent fit, accepting the bias of the data size (Agresti 2002, pp. 178-187).

Finally, given the causal and logic diagrams for considerations in this research, we have at maximum three indicator-independent variables. A control for endogeneity between innovation and profit is difficult to judge beforehand, except if it is determined at the beginning of the critical process that a majority portion of the capital expenditure will be spent on cutting-edge innovations that would certainly lead to above-average profits. But this assumption is clearly not suitable, as it is contradicting to our questions of causality in the actual setting. Therefore, as a consequence, the strategy proposed by Crepon *et al.* (1998) is applied to ensure a no-nonsense view toward the problems at hand.

In light with the above ideas of examinations, in essence, the research investigation has three hypotheses:

H1. Vietnamese firms in this period of economic turmoil will rely more on capital assets than on a disciplined creative process.

H2. Vietnamese firms in this period of economic turmoil will rely more on physical assets than on a disciplined creative process.

H3. Vietnamese firms that use a creative disciplined process will perform better than firms that rely on either or both capital and physical resources.

To examine whether, in a period of turmoil, Vietnamese firms do appear to rely on physical and capital resources in lieu of using creative processes, we examined debt-to-equity ratio, rate of asset size increase, severity of loss and qualitative information over the real-world activities of firms with respect to creative performance – for instance, optimal solution on inventory management and technical innovations. An earlier paper (Vuong and Napier, 2012) argued that without "creative quantum", elements of creative energy for thinker and implementer, made of useful information, data and primitive insights on solutions, needed multiple filters and a creative discipline in place; an increasing consumption of resources leads to wasted resources, lower efficiency and diminishing returns. So a key question is what happens if reliance on capital and physical resources overwhelms emphasis on innovative outcomes? The type of investigation using categorical data analysis enables us to justify the relationship between "qualitative factors" obtained from the market data, despite the fact that there is a limit to our results if we want to have more predictive power in the presence of quantitative variables in logistic regressions, such as the size of incremental expenditure and/or enterprise expansion in terms of sales volume or market share.

Thus, to examine the question, we used categorical data analysis for count data, which were obtained from both qualitative and quantitative information. This analysis was logistic regression estimations for dichotomous response variables and categorical predictor variables. A brief discussion of our statistical methods for research follows.

$$\ln\left(\frac{\pi(\mathbf{x})}{1-\pi(\mathbf{x})}\right) = \text{logit}(\pi) = \beta_0 + \beta_i X_i^K, i = 1, \ldots, K$$

In this model, $\pi(\mathbf{x})$ is to represent the success probability, i.e. $Y_i = 1$; Y_i is the event we want to observe from the empirical data; β_0 is the intercept; and β_i coefficients associated with the ith predictor variable, X_i . $\pi(\mathbf{x})$ is given below:

$$\pi(\mathbf{x}) = \frac{e^{(\beta_0+\beta_1 X_1+\ldots+\beta_K X_K)}}{1 + e^{(\beta_0+\beta_1 X_1+\ldots+\beta_K X_K)}}$$

The standard null hypothesis is $\beta_i = 0$, for each $i = 1,\ldots,K$. For examining interactions between variables, the null hypothesis becomes $\beta_i\beta_j = 0$.

The likelihood ratio test statistic is employed for hypothesis testing using:

$$G^2 = -2\ln\left(\frac{\ell_0}{\ell_1}\right) = -2(L_0 - L_1),$$

where ℓ_0 is the numerical value of the likelihood function computed from the observed data using under the null hypothesis estimate (π) and ℓ_1 under the empirical data-based estimate ($\hat{\pi}$). This G^2 test statistic follows a χ^2 distribution with K degrees of freedom (df; see Agresti, 2002 for a full account of technical treatment of logistic regression analysis).

The data set came from published reports and official information releases by companies listed on the Ho Chi Minh City Stock Exchange and the Hanoi Stock Exchange. Out of the approximately 700 companies listed on these stock exchanges, we randomly selected 150. Other data sample came from companies that we have followed for quite some time. The data set has 154 data points in total.

For each data point, the following attributes are considered:

- how efficiently does the firm operate in economic terms, e.g. making profits (end second-quarter 2012 performance compared to performance in the previous two quarters), suffering a loss or approaching bankruptcy;
- how much does the firm rely on equity and debt capital for growth, measured by comparing sales to total assets, and leverage ratio;
- how much does the firm rely on physical assets, measured by reliance on access to land, mine/quarry and related natural resources (whether these tangible resources are accounted for a large portion of the firm's total assets and generate most of revenues); and
- to what extent does the firm have innovation or creative solutions at work (whether new product, new service and new management process are reported).

Due to the lag effect of investments (financial and physical) to business performance, reliance on resources was measured at the end of 2011 fiscal year.

All of these predictor variables are categorical, and because we identified only two values 'Yes = [15,002] and 'No = 0 [5002], this estimating model is dichotomous, both with response and predictor variables. The treatment follows Azen and Walker's (2010) dummy coding; Tables I and II show the structure for the empirical data.

In both Tables I and II, Inn1 means "existence of innovation verified" and Inn0 "not verified". "Yes" and "No" are confirmation of efficient firm performance as observed with our empirical data. Cap1 means "Heavy reliance on capital", Cap0 means "Not reliant"; likewise, As1 and As0 are "Reliant on physical asset endowments" and "Not reliant", respectively.

These two subsets of were used to learn more about the problem of reliance on resources versus the value of innovative production/solutions with respect to economic performance of companies. The results from logistic regressions follow.

Empirical results

The following statistical estimations were performed with SAS. An exploration into the overall model fit was done by testing the global null hypothesis H_0:$\beta_1 = \beta_2 = \ldots = 0$, yielding corresponding likelihood ratio test statistic values, which reject the H_0.

The examination of the "success formula" that prevails in the transition economy of Vietnam is typically based on the use of capital and physical resources. To verify this, the first two separate estimations look like:

$$\ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 \text{ and } \ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_2 X_2$$

where X_1,X_2 are predictor variables, "Capital" and "Asset", respectively. The reference categories for these two models are Cap = Cap0 and Asst = As0, in this order.

The estimation results are provided in Table III:

Our estimations indicated strong reliance on either capital resources or ability to acquire physical resources within the surveyed sample of enterprises – with all χ^2-Wald scores showing strong significance at any conventional level, which have shown positive performance in the economy's troubled times. In the latter (i.e. $\text{logit}(\pi) = \beta_0 + \beta_2 X_2$), the intercept is weakly significant at 10 per cent conventional level, with the

Table I. Count data for well-performing firms

Yes	Cap1	Cap0
Inn1		
As1	0	2
As0	7	23
Inn0		
As1	1	4
As0	1	16

Table II. Count data for poor-performing firms

No	Cap1	Cap0
Inn1		
As1	0	0
As0	0	0
Inn0		
As1	67	2
As0	29	2

Table III. Results on well-performing firms, innovation excluded

Parameter	df	Standard estimate	χ^2-Wald	p-value
		$\text{logit}(\pi) = \beta_0 + \beta_1 X_1$		
Intercept	1	2.42	21.52	< 0.0001
Cap (Cap1)	1	−4.79	58.21	< 0.0001
		$\text{logit}(\pi) = \beta_0 + \beta_1 X_2$		
Intercept	1	0.42	3.24	0.0721
Asst (As1)	1	−2.70	34.68	< 0.0001

χ^2 -distributed Wald score being 3.24 and p-value at approximately 0.07. Thus, reliance on resources, either capital or physical, was found to be a decisive factor among somewhat stable and satisfactory corporate performers.

The above regression results suggest the contribution of reliance on capital resources and physical assets. Then, the second specification that was examined had the form of $\text{logit}(\pi) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$. In this, a third dummy variable was introduced into the equation, the "innovation factor", with which "no innovation" is the reference category.

The estimating of the above equation showed a substantial change in significance levels of all coefficients of dummy variables introduced into the model (Table IV). Largest magnitude of coefficient belongs to "innovation" predictor variable, followed by "reliance on physical assets". Nonetheless, with a small numerical value for χ^2 -Wald being 0.01 and 1.7, respectively, both coefficients are not statistically significant at conventional levels, suggesting that they do contribute to the meaningful explanation about positive performance of well-performing enterprises. The reliance on capital resource is overwhelming, although with small estimated coefficient, presented by a large χ^2 -Wald value of 32.6, and a $p < 0.0001$.

The next question was which factors would likely have a strong impact on the performance of poor-performing enterprises in the sample data. The third specification is established to look into these, bearing the form:

$$\ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2,$$

where X_1, X_2 are predictor variables, "Capital" and "Asset", respectively, with Capital = 0 and Asset = 0 serving as reference, giving two dummy variables – one for reliance on capital resource, the other for reliance on physical asset, when each answer is "Yes" and the response variable is corporate performance when their performance is recorded as "Negative".

Exploration of the overall model fit was done by testing the global null hypothesis, yielding the likelihood ratio test statistic $G^2 = 125.5$ and χ^2 -Wald of 44.1. Both test statistics follow a χ^2 distribution with 3 df. Because the critical value for $\chi^2_{(3)} = 11.3$, the global null hypothesis of no relationship is decisively rejected.

Regarding the analysis of individual variable effects, "reliance on capital resources" showed a significant effect, with χ^2 -distributed Wald score (df = 1) being 26.5 (significant at any conventional level), while "reliance on physical asset" yielded a test score of 2.9, or statistically significant at 10 per cent conventional level. Nonetheless, the reported value of Wald test statistic of 0.46 supports H_0:$\beta_3 = 0$. Therefore, for better adjustment of this specification, only effects of dummy-coded variables in the original specification should remain. That is, we should only rely on the following simple

Parameter	df	Standard estimate	χ^2-Wald	p value
Intercept	1	1.99	8.92	0.0028
Cap (Cap1)	1	−5.20	32.63	< 0.0001
Asst (As1)	1	−1.17	1.70	0.1916
Inno (Inn1)	1	15.69	0.01	0.9348

Table IV. Results on well-performing firms, innovation included

specification for gauging the effect of "capital resource" and "physical resource" on failures of corporate firms surveyed:

$$\ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

Performing the adjusted model provides for results reported in Table V. The numerical values of likelihood ratio and Wald statistic are almost identical to the previous estimation. However, estimates and significance of predictor variables in this simplified specification improve substantially, and are provided below.

In summary, the abovementioned empirical results reject the null hypothesis. That is, successful businesses do not rely on physical and financial endowments in two separate situations:

(1) the businesses perform some innovation; and

(2) the businesses perform no innovation.

In addition, three findings follow:

(1) In a transition period, a typical characteristic of successful business firms was their reliance on *either* capital or physical endowments, while the innovation factor was not significant.

(2) Poor-performing businesses exhibited evidence of over-reliance on both capital and physical endowments.

(3) Businesses that relied on both capital and physical endowments tended to downplay creative performance.

Implications and further research

The novelty of this paper is its exploration of the "resource curse" problem as a counterexample of previous discussions about creativity: by examining reliance on capital and physical resources, the gap between expectations and ex-post actual performance became clearer under conditions of economic turmoil. Indeed, the findings suggest that such reliance, in the absence of creative discipline, could explain unsustainable performance of business operations, especially during chaotic periods that are typical in a transition economy.

In this section, we review several findings and possible implications for future research, for business and for policy.

First, in a tumultuous transition period, a typical characteristic of successful Vietnamese firms was their reliance on either abundant capital resources or favorable conditions that allowed them to tap physical asset endowments. In this case, the innovation factor was not significant.

Table V.
Results of maximum-likelihood estimation on poor-performing firms, innovation excluded

Parameter	df	Standard estimate	χ^2-Wald	p value	e^{β}
Intercept	1	−3.25	22.86	< 0.0001	0.04
Cap (Cap1)	1	4.62	41.82	< 0.0001	101.10
Asst (As1)	1	2.45	11.68	0.0006	11.55

Second, poor-performing enterprises exhibited evidence of over-reliance on both capital and physical assets. In other words, both successful and less successful firms sought out and relied on capital and/or physical assets while concurrently disregarding creativity and innovation resources.

A third finding from the study is that firms that relied on both physical and capital resources (i.e. more successful ones) tended to downplay creative performance, exhibiting little or no effort to apply creative disciplines at work.

The fourth finding falls from the previous one: reliance on capital/physical resources and adoption of "creative discipline/innovations" tend to be mutually exclusive.

In essence, Vietnamese firms in transition did not use creativity or innovation in any particular way or systematic fashion as an input for performance. In fact, some evidence suggests that firms face the law of diminishing returns in troubled times, when market conditions are unfavorable. Even if the economic environment improves, we might expect that firms relying on abundant endowments would, at least, have below-average performance, as Sachs and Warner (1995) prove the negative relationship between resource abundance (measured by a country's resource-based exports as a per cent of GDP) and economic growth.

So why do firms in transition economies, and particularly in Vietnam, appear to rely so heavily on what some would call the "resource curse" of physical and capital assets to the neglect or detriment of accessing creative approaches? We offer several possible explanations.

An explanation for the "resource curse" – or over-reliance on physical and capital resources – could stem from a type of corporate "destructive creation" (Metcalfe and Ramlogan, 2006; Murshed, 2004; Ross, 1999) In such a case, firms appear to use abundant capital and physical assets to create various business operations outside of their core competency while ignoring the innovation factor. If they do ignore know-how and "creative capital", they could miss opportunities to improve productivity and/or introduce positive changes to their business operation and management.

Somewhat similar to Nelson and Nelson's (2002) ideas of the lack of intersection and integration of the societal level and individual creative capital or know-how, firms that depend on physical and capital assets, but not creative or human know-how assets, may not reach their full potential. That could occur from simple ignorance or from deliberate avoidance, which would be hard to determine. Yet, that pattern of overusing capital and physical assets may then become part of the corporate culture, and thus becomes hard to change. As a result, those firms that tend to follow a pattern of amassing resources both before and after their success continue to do so, perhaps even long after it makes sense. In some ways, this reflects the pattern of firms later caught by disruptive innovation – following the common pattern of continuing to do what worked in the past without considering change for the future (Christensen, 2011).

In addition, creativity and innovation in business may simply be concepts that are less widespread in some areas of the world or within some cultures. The hierarchical nature of SOEs and some business organizations in a Confucian culture, like Vietnam, may prevent some ideas from percolating upward. Further, the historical legacy of tradition in the culture may also limit the willingness to take risks. Additionally, the 50 years of a planned economy in Vietnam may have restricted the need for managers to make dramatic business choices or take risks. Hence, they may just be unfamiliar with

thinking and using creativity as another type of resource to tap (Metcalfe, 2001; and Metcalfe and Ramlogan, 2006).

Another dimension may be that when entrepreneurs start new ventures, many will aim at creating personal wealth accumulation rather than contributing to national economic prosperity and innovative pursuits. That is perhaps to be expected in transition economies moving from planned to market based once, but the implications are that their relationship-based rent-seeking activities become dominant (Vuong and Tran, 2009). When that happens, most, if not all, entrepreneurial efforts become a race to capture as many resources as possible. And what resources are easiest and most tangible? Capital and physical assets, of course. In such a race, an entrepreneur may have little energy left for anything that becomes a creative endeavor.

Yet another explanation for this pattern of behavior may be that (new) business owners are often eager to join with or be acquired by "strategic partners", as a way to cash in their start-up achievements. This also shifts them from "entrepreneurs" to "capitalists" (Vuong *et al.*, 2010). To this end, the entrepreneurs are less willing to create value but prefer to speculate in scarce resources, such as real estate business where lands are scarce or banking operations where money is scarce.

Several examples exist for this sort of "scramble" for resources in Vietnam. In Vietnam's corporate bond market in 1990-2010, Vuong and Tran (2011) found that SOEs and commercial banks, organizations that had already acquired huge volumes of resources, were the most active bond issuers dominating the market. In addition, major stock market players take advantage of well-known brands to obtain favorable working capital, while the others are facing credit crunch. Another example comes from the wood processing and real estate development firm Hoang Anh Gia Lai (HAG). The firm was a heavily traded stock on the Vietnam Stock Market, and enjoyed both physical resources (land and wood) and financial resources when it successfully issued two-year bonds in 2008. This was a time when other enterprises had difficulty accessing commercial short-term credit (Vuong and Tran, 2011). Then the firm's problems exploded. In May 2012, HAG reported to shareholders that it had a debt burden of USA$750 million, or 63 per cent of total assets. Vietnam's governmental leaders then faced more trouble with the bankruptcy of the state-run shipbuilding conglomerate Vinashin and mounting debts of other SOEs, which reached over USA$60 billion by the end of 2012. In a large part, the problems may have been related to rapid accumulation and use of physical and capital to the detriment of the firms and country as a whole.

Indeed, the corporate sector's addiction to resources may contribute to economic deterioration, through a downward spiral of lower efficiency leading to consumption of more resources. On the other hand, the "innovation factor" has not been tapped as a source of economic growth in Vietnam's transition economy. The absence of innovations and creative performance has made the notion of "resource curse" become identical to "destructive creation" implemented by resource-rich privileged firms and related rent-seekers, and amplified the adverse effect of misallocation of resources during a turbulent transition period.

So what might this mean for future research? Clearly the value of innovation and creativity within some transition economies has become clearer and is a potentially rich source of ideas for future research. Prahalad's (2009) early work on the base of the pyramid suggests that creativity is widespread in emerging economies but perhaps it just has not been as systematically tapped or developed to reach full potential in a

transition economy like Vietnam. Understanding better what the determinants and obstacles may be at the policy, business and even cultural levels could help determine directions and policies for business and governmental leaders alike. Finally, research that builds on the notion of creating and transferring capabilities (March and Simon, 1958; Nelson and Winter, 1982) and organizational (and institutional) change and routine (Becker *et al.*, 2005) would also be useful in emerging and transition economies.

References

Agresti, A. (2002), *Categorical Data Analysis*, Wiley, Hoboken, NJ.

Antonelli, C. (2000), "Collective knowledge communication and innovation: the evidence of technological districts", *Regional Studies*, Vol. 34 No. 6, pp. 535-547.

Azen, R. and Walker, C.M. (2010), *Categorical Data Analysis for the Behavioral and Social Sciences*, Routledge, New York, NY.

Bartelsman, E.J. and Dhrymes, P. (1998), "Productivity dynamics: US manufacturing plants, 1972-1986", *Journal of Productivity Analysis*, Vol. 9 No. 1, pp. 5-34.

Becker, M.C., Lazaric, N., Nelson, R.R. and Winter, S.G. (2005), "Applying organizational routines in understanding organizational change", *Industrial Corporate Change*, Vol. 14 No. 5, pp. 775-791.

Christensen, C.M. (2011), *The Innovator's Dilemma: The Revolutionary Book that will Change the Way You do Business*, Harper Business, New York, NY.

Crepon, B., Duguet, E. and Mairessec, J. (1998), "Research, innovation and productivity: an econometric analysis at the firm level", *Economics of Innovation and New Technology*, Vol. 7 No. 2, pp. 115-158.

Dierickx, I. and Cool, K. (1989), "Asset stock accumulation and sustainability of competitive advantage", *Management Science*, Vol. 35 No. 12, pp. 1504-1511.

Djankov, S., Montalvo, J.G. and Reynal-Querol, M. (2005), "The curse of aid", Economics Working Paper No. 870, Department of Economics and Business, Universitat Pompeu Fabra, Barcelona.

Dosi, G. and Marengo, L. (1994), "Some elements of an evolutionary theory of organizational competences", in England, R.W. (Ed), *Evolutionary Concepts in Contemporary Economics*, University of Michigan Press, Ann Arbor, MI.

Dosi, G., Nelson, R.R. and Winter, S.G. (2000), "Introduction: the nature and dynamics of organizational capabilities", in Dosi, G., Nelson, R.R. and Winter, S.G. (Eds), *The Nature and Dynamics of Organizational Capabilities*, Oxford: Oxford University Press, pp. 1-22.

Grant, R.M. (1996), "Toward a knowledge-based theory of the firm", *Strategic Management Journal*, Vol. 17 No. 7, pp. 109-122.

Kogut, B. and Zander, U. (1992), "Knowledge of the firm, combinative capabilities, and the replication of technology", *Organization Science*, Vol. 3 No. 3, pp. 383-397.

March, J.G. and Simon, H.A. (1958), *Organizations*, University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship, Champaign, IL.

Metcalfe, J.S. (2001), "Institutions and progress", CRIC Discussion Paper No. 45, The University of Manchester & UMIST, Manchester.

Metcalfe, J.S. and Ramlogan, R. (2006), "Creative destruction and the measurement of productivity change", Discussion Paper No. 75, The ESRC Centre for Research on Innovation and Competition, the University of Manchester, Manchester.

Murshed, S.M. (2004), "When does natural resource abundance lead to a resource curse?", Discussion Paper No. 04-01, Environmental Economics Programme; International Institute for Environment and Development, London.

Napier, N.K., Dang, L.N.V. and Vuong, Q.H. (2012), "It takes two to tango: entrepreneurship and creativity in troubled times – Vietnam 2012", *Sociology Study*, Vol. 2 No. 9, pp. 662-674.

Nelson, R.R. and Nelson, K. (2002), "Technology, institutions, and innovation systems", *Research Policy*, Vol. 31 No. 2, pp. 265-272.

Nelson, R.R. and Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Harvard College, Boston, MA.

O'Farrill, A.C. (2012), "Natural resource and services-based export performance: Cuba after 1989", Working papers in Technology Governance and Economic Dynamics No. 45, Tallinn University of Technology, Tallinn.

Olley, G.S. and Pakes, A. (1996), "The dynamics of productivity in the telecommunications equipment industry", *Econometrica*, Vol. 64 No. 6, pp. 1263-1297.

Perez, C. (2012), "Innovation systems and policy: not only for the rich?", Working papers in Technology Governance and Economic Dynamics No. 42, Tallinn University of Technology, Tallinn.

Pham, M.C. and Vuong, Q.H. (2009), *Kinh te Viet Nam: Thang tram va dot pha*, National Political Publishing House, Hanoi, Vietnam, Book written in Vietnamese, title in English: *The Vietnamese Economy: Rise and Fall, and Breakthroughs*.

Pham, T.T.T. and Riedel, J. (2012), "On the conduct of monetary policy in Vietnam", *Asian-Pacific Economic Literature*, Vol. 26 No. 1, pp. 34-45.

Prahalad, C.K. (2009), *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits*, 5th ed, Wharton School Publishing, Philadelphia, PA.

Ross, M.L. (1999), "The political economy of resource curse", *World Politics*, Vol. 51 No. 3, pp. 297-322.

Roubini, N. (2011), "China's bad growth bet", Project Syndicate, available at: www.project-syndicate.org/commentary/china-s-bad-growth-bet (accessed 14 April).

Sachs, J.D. and Warner, A.M. (1995), "Natural resource abundance and economic growth", NBER Working Paper Series No. 5398, Center for International Development and Harvard Institute for International Development, Harvard University, Cambridge MA.

Schumpeter, J.A. (1975 [1942]), *Capitalism, Socialism and Democracy*, Harper, New York, NY.

Vuong, Q.H. (2007), *Van Minh Lam Giau and Nguon Goc Cua Cai*, National Political Publishing House, Hanoi, Vietnam, Book written in Vietnamese, title in English: *The Civilization of Fortune Making and the Origin of Wealth*.

Vuong, Q.H. (2012), "Vietnam's economic challenges", Stratfor Global Intelligence, Available at: www.stratfor.com/other-voices/vietnams-economic-challenges (accessed 21 August).

Vuong, Q.H. and Napier, N.K. (2012), "Coffee filters and creativity: the value of multiple filters in the creative process", CEB-ULB Working Paper Series No. WP N° 12-036, Solvay Brussels School of Economics and Management, Université Libre de Bruxelles.

Vuong, Q.H. and Tran, T.D. (2009), "The cultural dimensions of the Vietnamese private entrepreneurship", *IUP Journal of Entrepreneurship Development*, Vol. 6 Nos. 3/4, pp. 54-78.

Vuong, Q.H. and Tran, T.D. (2011), "Vietnam's corporate bond market, 1990-2010: some reflections", *Journal of Economic Policy and Research*, Vol. 6 No. 1, pp. 1-47.

Vuong, Q.H., Tran, T.D. and Nguyen, T.C.H. (2010), "Mergers and acquisitions market in Vietnam's transition economy", *Journal of Economic Policy and Research*, Vol. 5 No. 1, pp. 1-54.

Vuong, Q.H., Napier, N.K. and Tran, T.D. (2013), "A categorical data analysis on relationships between culture, creativity and business stage: the case of Vietnam", *International Journal of Transitions and Innovation Systems*, Vol. 3 No. 1.

Wright, G. and Czelusta, J. (2004), "The myth of the resource curse", *Challenge*, Vol. 47 No. 2, pp. 6-38.

Further reading

Napier, N.K. and Vuong, Q.H. (2011), "Getting to the real story: what Vietnamese business people wish foreigners understood about doing business in emerging and transition countries like Vietnam before they start", *International Journal of Human Resources Development and Management*, Vol. 11 Nos. 2/3/4, pp. 208-220.

Napier, N.K. and Vuong, Q.H. (2013), "Serendipity as a strategic advantage", in Wilkinson, T.J. and Kannan, V.R. (Eds), *Strategic Management in the 21st Century*, Praeger, Westport, CT.

Nelson, R.R. and Winter, S.G. (2002), "Evolutionary theorizing in economics", *The Journal of Economic Perspectives*, Vol. 16 No. 2, pp. 23-46.

Pham, T.T.T. and Riedel, J. (2013), "Expectations and the cost of disinflation in Vietnam", *Journal of the Asia Pacific Economy*, Vol. 18 No. 1, pp. 86-97.

Corresponding author

Quan Hoang Hoang Vuong can be contacted at: vuong@vietnamica.net