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# Political Patronage and Economic Opportunity: Vertical Integration in Egyptian Textiles and Clothing

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## Abstract

Utilizing an original data set, this paper demonstrates how protectionist industrial policy during the period of hybrid liberalization has shaped the organizational structure of clothing firms in Egypt. It investigates determinants of vertical integration of clothing firms into fabric production. High-end market segments are a critical determinant of integration. Limited access to finance restricts the possibilities for many firms to undertake the investment required to integrate, whilst volatile and uncertain market conditions make firms more likely to rely on the market for their inputs. But there are nuances related to market segment. Producers of higher quality garments rely on imported textiles, so these producers do not integrate even if search and switch costs are high. But the opposite is true of producers relying on domestic suppliers. Foreign institutions are better able to ensure contract enforcement with respect to quality and timely delivery so that suppliers' opportunistic behaviour is deterred, reducing the necessity of clothing firms to integrate. This may not be the case with respect to domestic suppliers when domestic institutions do not guarantee the same level of enforcement. The adoption of the hybrid liberalization model meant that the transition to a market economy was not preceded by the creation of the necessary regulatory framework. This model resulted in inefficient upstream production and in an institutional setting conducive to agency problems. It also meant that business suffers excessive and inefficient bureaucracy. It is thus not possible for firms to achieve the first best outcome of arm's length relations based on frictionless market transactions. Given these structural constraints firms opt for the second best solution of make rather than buy, i.e. vertical integration. But only some firms are able to use the arbitrary and discretionary decision making system to their favour, negotiating government obstacles to successful business. Those linked

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Survey data for this paper are archived by the Inter-University Consortium for Political and Social Research <http://webapp.icpsr.umich.edu/cocoon/ICPSR-STUDY/04270.xml>.

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Extended author information available on the last page of the article



to power, prospered, whilst the businesses of others foundered against the wall of patronage, bureaucracy and red tape.

**Keywords** Vertical integration · Political economy · Access to power · Transaction costs · Textiles and clothing · Egypt

**JEL Classification** L2

### Résumé

À l'aide d'un ensemble de données originales, cet article démontre comment la politique industrielle protectionniste pendant la période de libéralisation hybride a façonné la structure organisationnelle des entreprises de confection en Égypte. Il étudie les déterminants de l'intégration verticale des entreprises de confection dans la production de tissus. Les segments de marché haut de gamme sont un déterminant essentiel de l'intégration. L'accès limité au financement empêche de nombreuses entreprises de réaliser les investissements nécessaires à l'intégration, tandis qu'avec des conditions de marché volatiles et incertaines, les entreprises sont plus susceptibles de dépendre du marché pour leurs intrants. Mais il existe des nuances selon le segment de marché. Les producteurs de vêtements de qualité supérieure dépendent de textiles importés, de sorte que ces producteurs ne s'intègrent pas même si les coûts de recherche et de changement sont élevés. Mais l'inverse est vrai pour les producteurs qui dépendent de fournisseurs nationaux. Les entreprises étrangères sont plus à même de s'assurer de l'exécution des contrats en ce qui concerne la qualité et les délais de livraison afin de dissuader les comportements opportunistes de la part des fournisseurs, ce qui réduit la nécessité pour les entreprises de confection de s'intégrer. Cela peut ne pas être le cas pour les institutions nationales qui ne garantissent pas le même niveau d'exécution des contrats de la part des fournisseurs nationaux. L'adoption du modèle de libéralisation hybride a signifié que la transition vers une économie de marché n'était pas précédée de la création du cadre réglementaire nécessaire. Ce modèle a abouti à une production en amont inefficace et à un cadre institutionnel propice aux problèmes d'agence. Cela signifiait également que les entreprises pâtissaient d'une bureaucratie excessive et inefficace. Il n'est donc pas possible pour les entreprises d'obtenir le meilleur résultat de relations d'égal à égal sur la base de transactions de marché sans friction. Compte tenu de ces contraintes structurelles, les entreprises optent pour la seconde solution, qui est de fabriquer plutôt que d'acheter, c'est-à-dire l'intégration verticale. Mais seules certaines entreprises sont en mesure d'utiliser en leur faveur le système de prise de décision arbitraire et discrétionnaire, en négociant les politiques gouvernementales qui viennent en obstacle à la réussite de leurs affaires. Les entreprises en lien avec le pouvoir ont prospéré, tandis que les autres se sont brisées contre le mur du clientélisme, de la bureaucratie et la réglementation rigide.



## Introduction

All firms face a decision of whether to make or buy the inputs they need for production. Whilst in standard neo-classical economics firms buy their inputs from a competitive market through costless transactions, transactions are in fact not costless. In Coase's (1937) seminal analysis, the boundaries of the firm are determined by the efficiency gains that can be realized by internalizing transactions that can be costly when carried out with external agents. That is, to overcome transactions costs, firms may choose to integrate vertically by producing the inputs they need within their boundaries rather than buying them on the market. Vertical integration is thus one way in which efficiency can be enhanced when transaction costs are substantial.

Based on an original data set collected in 2004, the paper investigates historical determinants of backward vertical integration of Egyptian clothing firms into textiles and fabric production. It examines the motivations for vertical integration in the context of a semi-liberalized economy in which political patronage plays an important role. Specifically, the paper analyses how a protectionist industrial policy has shaped the organizational structure—notably the integration decision—of clothing firms during the period of partial or hybrid liberalization of the textiles and clothing (TC) sector in Egypt. Hybrid liberalization refers to the partial liberalization of the sector. Whilst the ban on fabric imports was lifted in 1998, it was replaced by prohibitive tariffs and non-tariff barriers that continued to render imports of fabrics very costly and provided continued protection for domestic fabric producers (El-Haddad 2012). Thus, increasing the latter's bargaining power and opportunistic behaviour. Hybrid liberalization also meant that the transition to a market economy was not preceded by the necessary regulatory framework such as the enactment of a competition law, the establishment of competition and consumer protection authorities, or the establishment of modern dispute resolution mechanisms, further increasing the potential for supplier opportunistic behaviour.

The empirical analysis in this paper is rooted in both theory as well as the specifics of the textile and clothing industry setting in Egypt. In contrast to existing literature which stresses the technological determinants to integration (cf. Acemoglu et al. 2010), this analysis focuses predominately on setting-induced and transaction cost-related determinants. Specifically, the paper looks at the effect of the operational environment for firms' input and output markets, both that stem from contractual imperfections and obstacles to efficient production in input markets; and market volatility in output markets. Financial constraints are also considered. Of importance is access to power, in particular the close ties vertically integrated firms may have had with the National Democratic Party the country's ruling party for over 30 years.

The paper thus fills a gap in research, both through its focus on the determinants of firm organizational structure in Egypt, and how they are affected by the industrial policy of hybrid liberalization. To date there is no literature on this topic: not only for Egypt but nor for any other country in the Middle East and North Africa region.

The paper is organized as follows. First, the relevance of the make or buy decision in the context of the TC sector in Egypt is discussed. The literature and sample design follows. The methodology section presents the model; and



theoretical- and empirical-based predictions, along with data and variable definitions. Discussion of results and conclusion to follow.

## The Make or Buy Decision in the Context of the Egyptian Textiles and Clothing Sector

The clothing industry value chain is a chain of value-adding activities that brings the product from its conception to the final consumer. It extends from producing raw materials such as cotton or synthetic fibres, followed by textile/fabric production and includes the design and product development stage, cutting, assembly, laundering and finishing of the garments. Finally is the distribution, marketing, wholesale and retailing stage (Appelbaum and Gereffi 1994; Potter and Corbman 1967; Lee and Gereffi 2015). At every stage, services such as transport, finance and communication may be needed to complement the process. The chart in Annex 1 depicts the clothing value chain.

Vertical integration takes place when different stages are carried out by a single firm (Williamson 1971), they may be even carried out in different countries, in such a case it constitutes a global value chain (cf. McCormick and Schmitz 2002). Accordingly, the value chain shows the possibilities for vertical integration in a particular industry.

The setting of the TC industry in Egypt together with a poor business environment have led to a desire for certain types of clothing firms to vertically integrate, although the setting also created obstacles to such integration. Many of these factors are consistent with those predicted in the literature following on from Coase's basic insight.<sup>1</sup>

The history of Egyptian textiles and clothing falls into two periods: protectionism from the 1930s to the seventies and gradual liberalization thereafter. Protectionism involved a number of measures. Trade barriers included a direct ban on imports of both textiles and clothing and direct input subsidies to clothing producers, mainly for cotton. These policies characterized Egypt's state-oriented development model of centralized ownership and import substitution industrialization, as well as the protection of mass consumers through subsidized provision of goods and services. During the strict period of protectionism, public vertically integrated, large size firms dominated the manufacture of textiles, their market share slowly shrinking in favour of the private sector as liberalization ensued.<sup>2</sup>

The reversal of Egypt's state-led development strategy included the termination of the clothing subsidy in the early 1980s, the liberalization of cotton trade in 1994, and the lifting of the fabric imports ban in 1998 and that on clothing in

<sup>1</sup> Note that Egypt was hardly integrated into global value chains (GVCs) around this time and so this study focusses mainly on within-country vertical integration (for recent literature on GVCs see Natsuda et al. 2010; Humphrey 2006; Kilelu et al. 2017; Ndubuisi and Owusu 2021; Ndubuisi and Owusu 2022).

<sup>2</sup> By 2006 public sector share of fabric production accounted for just 31% and a negligible share of clothing production.



2002. However, the ban was replaced by prohibitive tariffs<sup>3</sup> continuing to render the largely protected clothing domestic market artificially profitable. Additionally, these policies had implications for both the efficiency of upstream market (fabrics/textiles) production and the distinct niches they served in the clothing market.

The clothing market can be divided into domestic and export. With the exception of a minor high-end segment and a slightly larger middle-market, mass domestic demand came from the low value end of the clothing market.<sup>4</sup> Protection of the domestic sector through tariff and non-tariff barriers restricted consumers' access to foreign products which meant that the quality of products demanded in the domestic clothing market were generally of lesser quality. However, slowly the limited liberalization and increased media access exposed middle-class Egyptian consumers to Western fashions, increasing the quality demands they made on clothing firms.

Similarly, after Egypt's traditional export destinations in the Eastern European Block collapsed in the early 1990s,<sup>5</sup> exporters were forced to look to the more demanding Western market, gradually having to move from lower to higher quality.

The implications of the protectionist period on the fabrics/textiles upstream market were severe: "the continuous production and distribution of subsidized cotton fabrics at such volume and subsidy [...] dealt a ruining blow to the commercial and development capabilities of the Egyptian textile industry" (Dahmouch et al. 2001, p. 7). Clothing quality suffered equally as: "carelessly produced coarse yarns, spun from high-quality Egyptian cotton lint, were delivered to weavers, who in turn produced poorly woven fabrics to be carelessly bleached or printed and delivered to undemanding customers" (*ibid*).

Despite improvements in this situation as protection was removed, quality concerns in fabrics remained significant in the industry on account of the newly imposed tariff and non-tariff barriers. Accordingly, clothing producers serving high-end niches had one of two options; either vertically integrate to ensure desired quality or import their fabric inputs. Unlike producers for the domestic market, since the early fifties *exporters* were allowed to import their fabric requirements—through the import temporary admission and the duty drawback systems<sup>6</sup>—provided these will be re-exported in a more processed form such as clothing.

On the other hand with the partial liberalization the business environment has not improved at the same pace. The process of creating market friendly institutions following the gradual liberalization of the economy has been largely unsuccessful. Many public institutions continued to be headed by army generals or senior police officials; institutions such as a competition or consumer protection authority were

<sup>3</sup> When the ban on textiles was eliminated tariffs of up to 54% were imposed on yarns and fabrics of cotton and man-made fibres; and specific tariffs as high as \$300 per item on more than 1000 categories of clothing were imposed when the import ban on clothing was lifted (Magder 2005 in El-Haddad 2009).

<sup>4</sup> Egypt being a middle-income developing country also supports this division.

<sup>5</sup> By the 1990s exports to the Eastern European block didn't exceed 30%.

<sup>6</sup> These systems allow clothing exporters temporary relief of tariff and tax payments and to be reimbursed for incurred insurance (which equals the value of tariffs and taxes that would otherwise be levied were the imported materials not used as export inputs) as long as the imports are used as inputs to their clothing exports within one year of being imported.



lacking and commercial dispute resolution mechanisms and courts were almost non-existent (El-Haddad 2008).

Business in Egypt suffers from a bureaucracy that is both excessive and inefficient. It is excessive in that the degree and time required for business registration and other reporting requirements are beyond those necessary for a market economy. It is inefficient since government has been slow to adopt modern technologies, or to reform the bureaucracy. Government employees have not changed their mind-set, the old ways, including carelessness, petty corruption and control for control's sake, remained deeply ingrained in the system.

This situation manifests itself not only in poor contract enforcement (*ibid.*), but in that private firms face other sources of high transaction costs, through lengthy import and export procedures, low transparency and inefficiencies in customs and port operations, handling costs and port charges and other non-tariff barriers.<sup>7</sup>

This narrative is consistent with Transaction Cost Theory (Williamson 1975, 1985) which considers vertical integration a response to market failures such as incomplete contracts, information asymmetries and inadequate institutions (cf. Altenburg 2006; Sabry 2022). In developing countries, government failure can be as important as market failure. Indeed, in developing countries, in which transactions costs of dealing with other firms are expected to be higher, and contract enforceability lower compared to developed countries, it is reasonable to expect that firms are very likely to become vertically integrated, resulting in a small number of large, vertically integrated firms. Khanna and Palepu (1997, 2000) provide evidence that, on account of costly contractual relationships, and rigid ill-functioning markets, larger organizational structures have continued to grow in emerging markets such as India, Malaysia and Latin America. By doing so these, integrated bodies imitate the functions of institutions that firms in the west often take for granted (cf. Trivkovic 2014).

But the very reasons that make firms want to integrate in developing countries are the same reasons that prevent all firms from having an *equal* chance to achieve just that. Developing countries are described as “limited access orders” (North et al. 2009) since they offer limited access to the polity. As they put it “the polity is based on privilege and unequal treatment” (2009, p. 12). For example, integration requires access to investment funds or to power to sidestep a rigid bureaucracy. That access may be restricted to those in political favour. Hence, we may expect a situation in which many firms would seek vertical integration, but not all who wish to are able to do so.

<sup>7</sup> In 2008 Egypt ranked 132nd and 118th of 134 countries in terms of tariff barriers and prevalence of trade barriers, respectively (World Economic Forum 2009), a situation that could have only been worse in earlier years. Poor port services stem from low traffic volumes, poor port management in addition to an inadequate regulatory framework (World Bank 2002).



## Literature

This study is situated within three distinct strands of literature. First, the transaction cost literature, which emphasizes vertical integration's role in improving efficiency by limiting agency costs in the presence of information asymmetries and contractual imperfections with input suppliers (Williamson 1979, 1985; Masten et al. 1991; Altenburg 2006; Gereffi et al. 2005). A limited quality upmarket and the ensuing business environment created a setting for increased lock-in potential for clothing firms. Years of protection created a quality gap. The quality of fabric input required by the higher segment of the clothing industry could not be easily satisfied by the largely protected domestic fabrics industry. The uncompetitive traditional fabric industries could not comply with the timely delivery required by firms producing for export to markets with four or more fashion seasons each year. The need to ensure input quality and timely delivery induced the desire for vertical integration in the clothing industry.

The poor business environment created a ripe environment for lock-in and potential hold-up problems with the available fabric suppliers. This is especially true of clothing firms serving higher quality segments of the market and those for which timeliness is a pressing concern. For exporters, late delivery fines are often specified per day in the contract between clothing exporters and importers. Some contracts transfer transportation costs from the importer (originally sea freight) to the exporter (as air freight). This cost is at least 10% of the total production cost of the exported merchandise.<sup>8</sup> Suppliers aware of this situation could press for better terms ex-post. This is especially supported by the fact that formal channels for dispute resolution in the textiles and clothing sector in Egypt are limited and inefficient, characterizing the industry in turn with poor contract enforcement, a ripe environment for hold-up problems (El-Haddad 2008). Thus, it is expected that firms serving higher end markets are more likely to vertically integrate into fabric production to ensure efficiency and avoid hold-up.

Output market conditions are also relevant. Risk adjusted property rights theory (Hanson 1995)—a variant of the influential modern property rights theory developed by Grossman and Hart (1986), Hart (1995), and Hart and Moore (1990)—argues that backward integration exposes the buyer to a higher degree of “natural risk”, which under certain conditions s/he would want to spread. In environments where risk-spreading channels are imperfect or absent, uncertain output markets would reduce the likelihood for vertical integration (e.g. Porter, 1980; Blair and Kaserman 1983; Harrigan 1983; Lieberman 1991). The same is true of demand variability in output market which will also deter vertical integration. Thus, firms facing greater market uncertainty and variability in output demand will likely rely on the market for their inputs and are expected to have a limited desire to integrate into fabric production.

Second is the literature emphasizing credit market imperfections and financial constraints on firm behaviour. Financial constraints prevent firms that would

<sup>8</sup> Qualitative interview material (1), November 2002.





otherwise have an incentive to integrate from doing so (e.g. McMillan and Woodruff 1999). These constraints have been stressed in the vertical integration literature (Banerjee and Munshi 2004; Acemoglu et al. 2009; Macchiavello 2010; Macchiavello 2012). Because of limited financial development in developing countries, entrepreneurs require collateral to present to financial intermediaries (Banerjee and Newman 1993; Legros and Newman 1996; El-Haddad et al. 2021), which only a limited number of firms have access to.

Financial constraints, more precisely lack of own funds combined with no access to credit and credit market imperfections are constraints to firm investment (Banerjee and Duflo 2005). Though, informal credit<sup>9</sup> is more likely to have a role, and may in some situations adequately substitute for formal credit. Generally, firms with limited access to finance are less likely to be integrated.

Finally, this paper relates to the body of work stressing political connections and the importance of network association and institutional substitutes in affecting organizational structure in developing countries. Banerjee and Munshi (2004) show how social ties lower the cost of capital for the inhabitants of the town of Tiripur compared to their new-comer counterparts, thus allowing the survival of less efficient firms, inducing vertical integration and contributing to capital misallocation.<sup>10</sup>

Sociological studies have also focussed on social links: Uzzi (1996, 1999) places a large weight on social relations as a source of power, largely influencing economic actions and outcomes.<sup>11</sup> Connections or institutional substitutes can work in various ways from improving firms' access to finance to enhancing enforceability of contracts and to sidestepping the relatively poor business environment more generally.

In Egypt quality of the bureaucracy, excessive regulation and the poor business environment created a ripe environment for corruption. In order to survive, firms often had to ingratiate themselves with government thereby gaining access to political networks and key political figures to avoid getting bogged down in the rigid system of controls; and to use the arbitrary and discretionary decision making system to their favour. The term "واسطة" *wasta* or connection means that connections are necessary in every walk of life, from getting your children into a good school to obtaining a manufacturing license. In the Egyptian context, access to power or the social network which has been of most importance in the past few decades prior to the Arab Spring of 2011, has been position in the NDP and, increasingly, closeness to the Mubarak family (for more recent literature on political connections cf. Schiffbauer et al. 2014; Diwan et al. 2016; Rijkers et al. 2014; El-Haddad 2020;

<sup>9</sup> The role of informal credit in developing countries has been stressed in McMillan and Woodruff (1999).

<sup>10</sup> The literature has taken a more sophisticated view of financial constraints than simply lack of funds restricting integration. Following both Acemoglu et al. (2009) and Macchiavello (2010), financial constraints induce vertical integration for some firms more than others. In Acemoglu et al. (2009) they do so only for firms for which contracts with input suppliers are sufficiently incomplete. In Macchiavello (2010), at intermediate levels of investor protection more financial deepening reduces vertical integration when contract enforcement is better. In other words the relationship between financial development and vertical integration takes an inverted U shape.

<sup>11</sup> Although he has not addressed this in the context of vertical integration.



El-Haddad and Zaki 2023). Firms with access to power are more likely to be vertically integrated.

## Sampling and Survey Data

This paper analyses clothing producers' decisions to integrate backward into fabric production. The sampling frame was provided by a list from the Federation of Egyptian Industries of 2500 private textiles and clothing firms, of which 1418 firms were clothing firms. Of those, only 421 were verified through a telephone pre-survey as currently operating and their contact details confirmed. The pre-survey also determined the order of integration to separate out firms who integrated forward from fabric into clothing production.<sup>12</sup>

Data from both the full sample frame of 1418 firms and the shorter verified frame of 421 firms showed the incidence of vertical integration to be limited (25% and 19% of all firms, respectively). Therefore, disproportionate sampling was applied by dividing firms into two groups: all vertically integrated firms in one group and a random sample of unintegrated firms in the other (cf. Maddala 1992). Disproportionate sampling implies sampling the two groups at different sampling rates to ensure having sufficient observations in the group of interest (i.e. the VI group) (Maddala 1992). All firms identified as being vertically integrated were purposefully included in the sample, with a random sample taken of the remainder.

Whilst all vertically integrated firms were purposefully sampled, refusals meant that just 89% of vertically integrated firms were interviewed. The remaining firms were randomly sampled, resulting in a total sample size of 257 firms, of which 63 were vertically integrated in fabrics. A discussion of sample selection bias and representativeness of the sample is in Annex 2.

The survey was conducted through March–June, 2004 through face-to-face interviews. Intensive, in depth pre-survey interviews were carried out through November–December 2002, which had informed the design of the questionnaire.

The interviewees were either owners or senior managers (which mostly coincide), so if not the decision-maker, then someone close to the decision making process. Different questionnaires were used, depending upon whether the firm (1) was vertically integrated into fabrics and/or retail at the outset, (2) integrated later, or (3) were unintegrated.

<sup>12</sup> The definition of the clothing industry used here covers ISIC Revision 3 code 1810 which is the manufacture of wearing apparel, except fur. Specifically this class covers manufacture of wearing apparel made of leather or composition leather, manufacture of work wear, manufacture of other outerwear made of woven, knitted or crocheted fabric. It also includes non-wovens for men, women and children such as coats, suits, ensembles, jackets, trousers and skirts. Additionally, it includes the manufacture of underwear and nightwear made of woven, knitted or crocheted fabric, lace, etc. for men, women and children, so shirts, T-shirts, underpants, briefs, pyjamas, nightdresses, dressing gowns, blouses, slips, brassieres, corsets, etc. Manufacture of babies' garments, tracksuits, ski suits, swimwear; manufacture of hats and caps and manufacture of other clothing accessories: gloves, belts, shawls, ties, cravats, hairnets are also included. Finally, it includes custom tailoring, manufacture of headgear of fur skins and manufacture of footwear of textile material without applied soles. More generally it includes articles of apparel and clothing accessories, both knitted or crocheted and non-knitted nor crocheted.



Each questionnaire consists of nine modules in addition to a screening section to decide which of the four questionnaire types to implement. Those modules were (1) general questions on firm characteristics; (2) vertical integration and export status; (3) product quality (investment and temporal specificity issues); (4) demand variability/uncertainty, adjustment and monitoring costs; (5) firm size; (6) institutions and institutional substitutes; (7) lock-in and switching costs; (8) contracts; and (9) dispute resolution.

## Methodology

The data are fitted to a simple model. VI is usually modelled as a function of the current values of the right-hand side (RHS) variables, but many of these may be endogenous. The model used here largely overcomes the first problem by using lagged values of the determinants. This makes theoretical sense, as it is the value of explanatory variables at the time the decision to integrate was made which matter. The model also attempts to capture a fuller range of VI determinants.

In most empirical studies, vertical integration is measured as a dichotomous variable: taking a value of 1 if the share of inputs produced internally rather than purchased exceeds some threshold.<sup>13,14</sup> A continuous variable was suggested instead in a review of the empirical literature (Joskow 1988). Based on the above, the estimated model takes the following form:

$$VI_{jt} = VI_{jt}(X_{t-i}; \mathcal{E}_{jt}) \quad (1)$$

in which  $VI_t$  is the dependent variable, a fractional response variable: the fraction of fabrics produced internally to the value of the firm's total fabric requirements during the last completed financial year 't' for firm  $j$ <sup>15</sup>;  $X_{t-i}$  is a vector of the level of the independent variables for the year(s) preceding the vertical integration decision, as such pre-determined and more likely exogenous.<sup>16</sup>  $\mathcal{E}_t$  is the error term.

Close to half of all vertically integrated firms are fully vertically integrated (i.e. no longer deal with the upstream market), in which case the dependent variable would take the value of 1. For the remaining firms (i.e. those for which  $0 < VI < 1$ ),

<sup>13</sup> This applies in the case of backward integration, which is what is analysed here. An analogous formulation applies for forward integration. Exceptions are Wernerfelt (1997) who treated the dependent variable as continuous, and Hubbard (1999) who used a categorical dependent variable. In contrast, the literature on franchising, which is a closely related literature to that on VI, has abandoned the use of dichotomous variables. The literature on chain franchising uses the percentage of units franchised (as opposed to company-owned) as its dependent variable (e.g. Lafontaine 1992). For another interesting article on franchising versus vertical integration see Maness (1996).

<sup>14</sup> For example, Woodruff (2002) sets VI at 1 if the manufacturer sells any portion of production through owned stores, and Montverde and Teece (1982) do so if the firm produced 80% or more of a component internally.

<sup>15</sup> The question was asked separately for clothing for the domestic market, and those serving the export market. The dependent variable is the weighted average of these shares.

<sup>16</sup> Cognitive concerns relating to respondent recall, as well as to 'time problems', i.e. the appropriate choice of time period for dependent and independent variables is discussed in Annex 5.



the fraction varies between 0.05 and 0.97. The median, which is also approximately the mean, is 0.54.

Following Papke and Wooldridge (1996), the conditional distribution of the dependent variable (VI) on the independent variables ( $X$ ),  $E(VI|X) = G(\cdot)$ , is estimated by assuming a logistic distribution, i.e.  $G(\cdot) = (e^{Xb}/1 + e^{Xb})$ , which is then estimated by maximum likelihood (MLE). The attractive feature of this approach is that it can deal with values at the boundaries without the need to use (ad hoc) transformations of the data. It is thus superior to OLS because of the concentration of observations at both  $VI=0$  and  $VI=1$  in the sample.

The vector of independent variables  $X_{t-i}$  controls for market niche and agency; output and market conditions; financial constraints and access to power. A selection of survey questions are in Annex 3; and descriptive statistics and theoretically predicted signs of independent variables in Annex 4. The following details the chosen controls:

*Market niche and agency* is controlled for using a number of variables, namely, disputes over quality, exports, search and switch costs, social costs and monitoring costs. The niche indicates the relative quality of firm output. This could be partially measured directly by information on whether the firm served the export or the domestic market, on the intensity of exporting, precisely percentage of clothes a firm exported prior to integration, alternatively it could be measured by the frequency of disputes over quality with fabric suppliers in the years preceding the vertical integration decision.

Market niche has intricate implications for various agency issues, in particular for lock-in and potential hold-up threats. Agency problems are more severe the more sophisticated the market segment. Market segment is only partially controlled for by the export variable, there is also a quality spectrum in the domestic clothing market. Firms serving the high-end of the domestic market have timeliness and quality concerns too. For example, in one of the in-depth interviews with a firm solely serving the domestic market, the CEO explained that “when one designs one’s own women’s and menswear collection, one cannot afford to wait for the blouse to be produced later while its matching skirt is all set for their ‘red and white collection’ exhibition”.<sup>17</sup> The high-quality market segment has to be geared to the fashion cycle, getting products to the market in time for the right fashion season. Yet, part of the problem with suppliers has been late delivery and inferior quality which brings us to the concept of lock-in with repeat suppliers.

Lock-in is a situation in which competitive situations between buyers and sellers are transformed into monopsonistic or monopolistic ones. ‘Hold-up’ hence refers to either buyers behaving opportunistically to exploit their monopsonistic powers or sellers behaving opportunistically to exploit their monopolistic powers. Accordingly firms that serve high quality, high fashion segments of the market are more likely to be subject to “hold-up” by their input suppliers.<sup>18</sup> This source of hold-up would partly correspond to Masten et al.’s (1991) temporal specificities (see also Woodruff

<sup>17</sup> Qualitative interview material (2), November 2002.

<sup>18</sup> Public sector firms may not hold up firms by attempting to change the terms of the contract to ensure timely delivery. But individual managers may extract side payments to ensure it.



2002; Pirrong 1993; Hubbard 1999). Situations that give rise to these kind of specificities are situations “where timely performance is critical, [thus] delay becomes a potentially effective strategy for exacting price concessions” (Masten et al. 1991, p. 9). This situation renders vertical integration an attractive solution to the problem.

Two variables are used to proxy temporal and quality specificities namely search and switch costs and social costs. Search and switch costs reflect how costly it is for the clothing firm to find and switch to alternative input suppliers. Social cost is another variable which is also a proxy for lock-in and potential hold-up. In social network settings, the social and moral costs involved in replacing suppliers with whom one has personal or family ties with can be so high so as to restrain economic agents from attaining efficiency (refer to exact definition in Annex 3). By restricting their ability to punish poor performance through cutting out suppliers to whom they are related, these costs operate by limiting economic agents’ choice set ex-post, in turn increasing their desire to integrate.

*Output and clothing market conditions* are measured by demand variability and sales uncertainty prior to integration. Firms are less likely to integrate backwards when they face large fluctuations in downstream demand (e.g. Carlton 1979; Chandler 1977; Porter 1980; Blair and Kaserman 1983). In general, when the market setting is volatile vertical strategies should entail insignificant degrees of internal transfer, lesser ownership stakes and fewer integrated activities (Harrigan 1983). In such circumstances, using the input market has risk-spreading benefits (Lieberman 1991). The strong influence of sales uncertainty is to be expected in an environment such as Egypt, where other risk-spreading channels are imperfect or absent. Other studies (e.g. Hanson 1995; Anderson and Schmittlein 1984) have also found that exposure to natural risk which they also measured by sales uncertainty, discourages vertical integration.

*Financial constraints* are measured by a group of three self-reported variables.<sup>19</sup> One indicates the extent to which high cost of finance limited the growth of the firm prior to integration, the higher the value the more severe the constraint. Issued capital signals firm size<sup>20</sup> but is also a measure of access to finance. Finally, the third variable captures how costly it would be to establish a fabrics unit.

*Access to power* or to social networks is measured by three variables: (1) access to foreign institutions proxied by foreign ownership in the firm; (2) membership to the garment commodity council a potential proxy for access to networks within the industry; and (3) location as per the breakdown of governorates indicated below.

Many essential institutions, such as well-functioning legal systems, equity, stock and insurance markets; and an impartial bureaucracy are usually missing or poorly functioning in developing countries. In Egypt, necessary market institutions such as competition and consumer protection authorities were still missing in 2004. Hence,

<sup>19</sup> The Central Bank only provides information on aggregate private credit not disaggregated by governorate.

<sup>20</sup> Firm size has been used in some studies as control variable. For example, Anderson and Schmittlein (1984) found that size is a significant determinant of the adoption of direct sales force (integration) as opposed to the use of a manufacturer’s representative (i.e. using the market). In essence, size if not considered as a financial constraint, represents a standard economies of scale argument: the larger the scale of operations preceding integration the more cost effective vertical integration can be.



individuals relied upon political connections and institutional substitutes to mitigate these institutional deficiencies, most usually by access to social networks (c.f. Macauly 1963; Haley 1997; Greif 1997; McMillan 1997; McMillan and Woodruff 1999).

Governorates are broadly divided into three dummies: Greater Cairo,<sup>21</sup> Alexandria—which are the two largest cities of Egypt—and four more governorates which are grouped together because of their geographical proximity and their similar characteristics namely Sharkia, Gharbia, Munufia and Dakahlia.

All four governorates cultivate cotton the main raw input of production for the majority of clothing firms. However, these four governorates *may* also largely proxy for access to power, in particular for membership to the National Democratic Party (NDP).

The NDP was the country's ruling party for over 30 years. It exercised uncontested power in state politics and was a de-facto single party characterized by authoritarian governance inside an "officially" multi-party system.<sup>22</sup>

This argument is based on firstly the pattern of round one of the presidential elections (May 2012), the first to take place after the January 2011 uprisings. This round included 13 candidates all of which represent revolutionary forces except two. The first, General Ahmed Shafiq, appointed prime minister by Mubarak during the uprisings having earlier served as minister of Civil Aviation under Mubarak's reign. As such, he is closely identified with the old regime. The second such candidate is Mohamed Moursy, the Muslim Brotherhood (MB) candidate.<sup>23</sup> It was these two non-revolutionary candidates who carried on to a second round of elections. General Shafiq topped the votes in just four governorates of Egypt's 27, which were sufficient to tip the scales in his favour against the most popular revolutionary figure, Hamdeen Sabahy, placing Shafiq second after the MB candidate. Fifty percent of Shafiq's total votes came just from these four governorates which are the ones represented by the NDP governorate dummy.

There had also been proof that textiles and clothing firms of those governorates supported the Tagammu' party who had collaborated with the NDP in opposing the Muslim Brotherhood and other Islamists in the 2012 presidential elections (Benin 2012).

Secondly, another reason for these four governorates proxying for NDP link is that the General Federation of Egyptian Trade Unions was the regime's primary means of mobilizing support in the street (Benin and El-Hamalawy 2007). The Federation itself, along with the sectoral general unions and most enterprise-level union committees, were firmly in the grip of the ruling National Democratic Party (NDP). "National Democratic Party supporters" were bussed to provincial polling places to stuff ballot boxes during the November 2005 parliamentary elections. These

<sup>21</sup> Greater Cairo includes Cairo, Giza and Kaliubia.

<sup>22</sup> The party was dissolved 16th April 2011 by court order in the wake of the Egyptian uprising of January 2011.

<sup>23</sup> MB's civic political party is called "Freedom and Justice" but they follow orders of the supreme guide, i.e. the "Murshid". These orders are meant to be made through an internal democratic process.



“supporters” were the miserably paid public sector workers concentrated in those governorates and rounded up by NDP-affiliated union bureaucrats.

Labour bosses also produced the ‘spontaneous’ cheering crowds who greeted presidential visits to outlying towns and ‘mass demonstrations’ like the regime-approved protest against the Iraq war in Cairo Stadium in February 2003 (*ibid.*). Whilst there has been some independent labour movement in the past especially in textiles and clothing factories in Mahalla El-Kobra located in the governorate of Gharbia and the other middle delta governorates it has often been thwarted and bought off. For example, the owner of a privatized firm bought off three newly elected union officials with payments of 20,000 pounds each (*ibid.*). Indeed, until 2011 all unions other than the ETUF were banned. During the Egyptian Revolution of 2011 ETUF leaders were active in defending the Mubarak regime, including participating in attacks on peaceful protestors. Thus, the 2012 voting patterns shows that firms of these governorates connected to the General Trade Unions represent long run political allegiances.

In the absence of a conflict of interest law in Egypt, the most successful businessmen—sometimes referred as the ‘cronies’ of the system—were tightly linked to political circles with the relationship blurred as to whether they became successful on account of their strong links or vice versa or a bit of both. These businessmen accompanied the president on his tours abroad and a number of them were active members of NDP’s “Policy Committee” where all economic policies and decisions were made. Several ministers themselves were practicing businessmen.<sup>24</sup>

*Other controls* are added such as whether the firm is a family inherited business, the age of the firm, its sales and assets to control for size.

## Extensions of the Model

The model is extended in three ways. First, it was clear from preliminary pre-survey interviews that clothing producers react to vertical integration pressures differently depending on whether they are dealing with domestic or with foreign fabric suppliers. Hence, in addition to estimating the model with a full sample, the regressions

<sup>24</sup> Another proof of how powerful these four governorate textiles and clothing firms are, is presented by their TC firms pushing the government to enact the Qualifying Industrial Zones (QIZ) Agreement in 2004 with the USA and Israel in response to the termination of the Multi-Fiber Agreement (MFA) that governed TC trade for 20 years (1974–1994) in accordance with the WTO Agreement on TC. The date for the complete phase out of export quotas was set to January, 2005. Phasing out of export quotas put a severe threat on relatively uncompetitive Egyptian TC firms. As the industry is placed into direct competition with more competitive countries such as China, India, Pakistan, Bangladesh, Vietnam and Turkey—which had been quota constrained under the former MFA—phasing out of the quota system was foreseen to have dire implications on Egypt’s TC industry. Firms located in QIZ enjoy duty-free and quota-free access to the US market. This free access, however, is conditional upon ensuring that 11.7% of exported products’ value is of Israeli origin. These powerful businessmen pressured the government into signing the QIZ protocol, the latter consequently rushing into accepting its relatively unfavourable terms and conditions (Institute of National Planning 2006). This episode demonstrates how influential the largest of these firms were. In fact, in a middle-income country such as Egypt this labour-intensive industry should have faded away long ago to higher value-added sectors. But the continuous protection the biggest players tightly linked to the government receive allowed them to continue to grow.





were also split between firms dealing with foreign and those dealing with domestic suppliers.

Similarly, the pre-survey interviews indicated different effects of search and switch costs depending on the nationality of suppliers the firm predominately deals with. Thus, these costs are disaggregated into costs with respect to foreign suppliers and costs with respect to domestic suppliers.<sup>25</sup>

Third, robustness checks are performed utilizing different measures for firm size, removal of insignificant variables and additional controls.

## Results

Maximum likelihood estimations are given in Table 1. The results of a basic model (regression (1)) containing the main determinants discussed above are given as regression (1). Model (4) is a fully specified model which disaggregates the variable search and switching costs utilized in regression (1). Regressions (2), (3), (5) and (6) split the sample by nationality of firms' repeat suppliers prior to integration. Robustness checks are in Table 2, regressions (2–7).

Table 3 calculates the marginal effects both at the means (which gives a fitted value of  $VI=0.01$ ), and at a level for the independent variables which gives a fitted value of the fraction integrated of around 0.5 (i.e.  $VI=50\%$ ), which, as will be seen, gives a much larger marginal effect. To obtain the values of the regressors for the latter, the average of each regressor was calculated for the ten observations having fitted values closest to 50%. The integer values of these averages were used for the calculation, giving an expected fraction integrated of 55%. Table 3 shows the marginal effects for these two sets of values of the regressors using the coefficients from the fuller regression regression (2). It shows marginal effects for a one standard deviation increase around the specified values of the regressors (either the mean<sup>26</sup> or the value selected to yield a fitted  $VI$  of 0.55).

## Discussion of Results

With respect to the *market niche and agency variables* results indicate that a *history of quality disputes* with the firm's repeat fabric suppliers prior to integration increases the likelihood of vertical integration (Table 1 regression (1)). With a

<sup>25</sup> Prior to integration, some firms dealt solely with domestic suppliers, some with foreign ones, and the rest with both types of suppliers. Accordingly, each firm will have at least one non-missing disaggregated search and switch cost variable. So as not to lose those observations for which one of these variables is missing, two missing dummy variables were included. One dummy is a search and switch cost dummy for foreign suppliers and another for domestic (regressions 4 in Tables 1 and 2 below). But since adding dummy variables in place of missing observations in a regression can be a source of bias (Jones 1996), the sample was also split by foreign and domestic repeat suppliers.

<sup>26</sup> The marginal values given by STATA are for a one unit change around the mean for continuous variables, and a change from 0 to 1 for the two dummy variables. These marginal changes have been multiplied by the respective standard deviation for each variable to derive the figures.





**Table 1** Main maximum likelihood estimation results

	Basic regression		Basic regression		Full regression	
	(1) Full sample	(2) Foreign suppliers	(3) Domestic Suppliers	(4) Full sample	(5) Foreign suppliers	(6) Domestic suppliers
Market Niche and Agency						
% Exported				0.037*** (0.009)	0.046* (0.023)	0.026*** (0.007)
Import dummy				- 0.043*** (0.023)	- 0.071* (0.035)	- 0.013 (0.0017)
% Exported*import dummy				- 0.042*** (0.014)	- 0.055** (0.023)	- 0.018 (0.016)
Quality disputes	0.456* (0.260)	0.1 (0.267)	0.447 (0.286)	- 0.199 (0.284)	- 0.01 (0.281)	0.418 (0.280)
Monitoring cost	- 0.251 (0.156)	- 0.205 (0.147)	- 0.236 (0.168)	- 0.12 (0.149)	- 0.165 (0.158)	- 0.243 (0.176)
Search & switch cost	0.383*** (0.164)	0.217 (0.192)	0.327* (0.171)		0.282 (0.226)	0.244 (0.170)
Search & switch cost w.r.t. domestic suppliers				0.188 (0.184)		
Search & switch cost w.r.t. foreign suppliers				0.156 (0.247)		
Missing dummy (domestic)				- 1.451 (1.194)		
Missing dummy (foreign)				- 2.254** (1.047)		
Social & moral cost	0.112 (0.178)	0.335 (0.231)	0.082 (0.187)	0.041 (0.199)	0.176 (0.225)	0.084 (0.207)
Output market conditions						



Table 1 (continued)

	Basic regression		Basic regression		Basic regression		Full regression		Full regression	
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)
	Full sample	Foreign suppliers	Domestic Suppliers	Full sample	Foreign suppliers	Domestic suppliers	Full regression	Foreign suppliers	Domestic suppliers	Full regression
Demand variability	– 0.841*** (0.222)	– 1.320*** (0.272)	– 0.829*** (0.224)	– 0.638*** (0.225)	– 1.323*** (0.314)	– 0.776*** (0.243)				
Demand uncertainty	– 0.551** (0.217)	– 0.443** (0.176)	– 0.476** (0.216)	– 0.604*** (0.199)	– 0.294 (0.193)	– 0.438** (0.195)				
Financial constraints										
High cost of finance	– 0.296* (0.153)	– 0.103 (0.155)	– 0.294* (0.162)	– 0.441** (0.182)	– 0.094 (0.141)	– 0.360** (0.182)				
Log issued capital	0.253*** (0.095)	– 0.103 (0.91)	0.319*** (0.098)	0.189* (0.107)	– 0.109 (0.124)	0.310** (0.128)				
Fabrics unit investment cost	– 0.947*** (0.204)	– 0.397*** (0.182)	– 0.912*** (0.227)	– 0.931*** (0.186)	– 0.291 (0.203)	– 0.966*** (0.204)				
Access to power										
Alex ( <i>D</i> )	1.049 (0.727)	0.08 (0.828)	1.122 (0.722)	0.22 (0.699)	– 0.194 (0.889)	1.19 (0.775)				
NDP gov ( <i>D</i> )	1.309* (0.787)	1.022 (0.991)	1.576* (0.865)	2.052*** (0.667)	0.441 (0.863)	1.965** (0.775)				
Controls										
% Foreign ownership	0.012 (0.010)	0.027 (0.018)	0.011 (0.011)	0.003 (0.010)	0.034* (0.018)	0.01 (0.011)				
Listed on stock market ( <i>D</i> )	– 0.778 (0.741)	– 1.275* (0.713)	– 0.334 (0.801)	– 1.087 (0.710)	– 0.611 (0.802)	– 0.104 (1.030)				
Tax incentive	– 0.005 (0.180)	– 0.051 (0.189)	– 0.011 (0.196)	0.036 (0.196)	– 0.204 (0.200)	– 0.064 (0.203)				

Table 1 (continued)

	Basic regression		Basic regression		Basic regression		Full regression		Full regression	
	(1)	(2)	(3)	(4)	(5)	(6)	Fully specified regression	Foreign suppliers	Domestic suppliers	
% Fabrics provided by sister company or branch	− 0.081*** (0.010)	− 0.589*** (0.095)	− 0.082*** (0.011)	− 0.053** (0.026)	− 0.556*** (0.103)	− 0.077*** (0.012)				
Others										
Log garment sales										
Log net assets										
Age										
Family inherited business ( <i>D</i> )										
Garment Commodity Council										
Constant	2.613 (2.084)	7.412*** (2.531)	1.759 (2.240)	6.843*** (2.587)	7.691*** (2.690)	2.255 (2.379)				
Number of observations	242	60	232	242	60	232				
Log likelihood	−47.36	−21.865	−44.105	−39.766	−20.177	−41.143				
$\chi^2$	161.163	285.796	145.542	120.859	280.685	159.689				
Degrees of freedom	15	15	15	20	17	17				

For purposes of replication of the results: estimation is carried out using the STATA generalized linear models (glm) function which fits models of the general form:  $E(Y_i) = x_i\beta$ . To use this command to estimate the fractional response model the logit is specified as the “link function”, with the “family” binomial. The marginal effects are then given using the mfx command, which is a post estimation command giving marginal effects estimated at the means of the independent variables

(1) Following Papke and Wooldridge (1996), the conditional distribution of the dependent variable (*VI*) on the independent variables (*X*),  $E(VI|X) = G(\cdot)$ , is estimated by assuming a particular distribution of the conditional distribution, which is then estimated by maximum likelihood (MLE). The conditional distribution of *VI* on *X* is assumed to be the logistic distribution, i.e.  $G(\cdot) = (e^{X\beta}/1 + e^{X\beta})$

(2) Coefficients are marginal effects (percentages); robust standard errors in parentheses, variables followed by (*D*) are dummy variables

(3) *p*-weights are used in all regressions

(4) \*Significant at the 10% level, \*\*Significant at the 5% level; \*\*\*Significant at the 1% level



Table 2 Robustness checks

	Basic regression	Different size measures for basic regression		Removal of insignificant variables	Addition of other controls with different size measures		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<hr/>							
Market Niche and Agency % Exported				0.037*** (0.009)			
Import dummy				− 0.043*** (0.023)			
% Exported*import dummy				− 0.042*** (0.014)			
Quality disputes	0.456* (0.260)	0.407 (0.263)	0.473* (0.264)	− 0.176 (0.256)	0.452* (0.264)	0.393 (0.291)	0.477* (0.269)
Monitoring cost	− 0.251 (0.156)	− 0.183 (0.167)	− 0.269* (0.158)	− 0.127 (0.150)	− 0.288* (0.164)	− 0.206 (0.168)	− 0.294* (0.161)
Search & switch cost	0.383** (0.164)	0.515*** (0.176)	0.371** (0.158)		0.343** (0.160)	0.484*** (0.163)	0.354*** (0.155)
Search & switch cost w.r.t. domestic suppliers				0.133 (0.189)			
Search & switch cost w.r.t. foreign suppliers				0.252 (0.243)			
Missing dummy (domestic)				− 1.687 (1.156)			
Missing dummy (foreign)				− 1.864* (0.970)			
Social & moral cost	0.112 (0.178)	0.071 (0.168)	0.116 (0.173)	− 0.007 (0.194)	0.143 (0.158)	0.089 (0.159)	0.123 (0.164)



Table 2 (continued)

	Basic regression		Different size measures for basic regression		Removal of insignificant variables	Addition of other controls with different size measures	
	(1)	(2)	(3)	(4)		(5)	(6)
Output market conditions							
Demand variability	-0.841*** (0.222)	-0.681*** (0.209)	-0.743*** (0.234)	-0.627*** (0.231)	-0.839*** (0.237)	-0.682*** (0.230)	-0.730*** (0.259)
Demand uncertainty	-0.551** (0.217)	-0.615*** (0.211)	-0.548*** (0.196)	-0.577*** (0.196)	-0.555** (0.219)	-0.626*** (0.213)	-0.556*** (0.196)
Financial constraints							
High cost of finance	-0.296* (0.153)	-0.312** (0.137)	-0.356*** (0.148)	-0.483*** (0.170)	-0.280** (0.142)	-0.311** (0.134)	-0.362** (0.141)
Log issued capital	0.253*** (0.095)			0.170* (0.103)	0.295** (0.128)		
Fabrics unit investment cost	-0.947*** (0.204)	-0.935*** (0.221)	-1.004*** (0.235)	-0.919*** (0.184)	-0.936*** (0.205)	-0.929*** (0.221)	-1.014*** (0.243)
Access to power							
Alex ( <i>D</i> )	1.049 (0.727)	0.733 (0.666)	1.243* (0.744)	0.352 (0.673)	1.006 (0.774)	0.928 (0.693)	1.351* (0.766)
NDP gov ( <i>D</i> )	1.309* (0.787)	1.048 (0.895)	1.106 (0.873)	2.085*** (0.674)	1.181 (0.755)	0.892 (0.837)	1.008 (0.890)
Controls							
% Foreign ownership	0.012 (0.010)	0.012 (0.010)	0.014 (0.009)		0.010 (0.010)	0.009 (0.010)	0.012 (0.010)
Listed on stock market ( <i>D</i> )	-0.778 (0.741)	-0.857 (0.687)	-0.627 (0.628)		-0.783 (0.830)	-0.731 (0.770)	-0.641 (0.727)
Tax incentive	-0.005	-0.001	0.080		-0.057	-0.032	0.054



Table 2 (continued)

	Basic regression		Different size measures for basic regression		Removal of insignificant variables	Addition of other controls with different size measures	
	(1)	(2)	(3)	(4)		(5)	(6)
% Fabrics provided by sister company or branch	(0.180) − 0.081*** (0.010)	(0.165) − 0.071*** (0.009)	(0.168) − 0.077*** (0.009)	− 0.047** (0.021)	(0.209) − 0.078*** (0.010)	(0.183) − 0.069*** (0.011)	(0.186) − 0.075*** (0.010)
Others							
Log garment sales		0.290*** (0.106)				0.344*** (0.114)	
Log net assets			0.258*** (0.092)				0.279*** (0.107)
Age					− 0.004 (0.021)	− 0.025 (0.024)	− 0.003 (0.022)
Family inherited business ( <i>D</i> )					− 0.125 (0.531)	− 0.152 (0.545)	− 0.263 (0.563)
Garment Commodity Council					− 0.703 (0.939)	− 0.555 (0.855)	− 0.27 (0.840)
Constant	2.613 (2.084)	0.712 (2.492)	2.084 (1.934)	6.761*** (2.479)	2.592 (2.128)	0.801 (2.523)	2.212 (1.923)
Number of observations	242	236	241	243	242	236	241
Log likelihood	− 47.36	− 49.6	− 47.185	− 40.451	− 47.051	− 48.701	− 47.003
$\chi^2$	161.163	129.479	137.47	117.072	164.251	138.758	136.432
Degrees of freedom	15	15	15	17	18	18	18

Table 2 (continued)

For purposes of replication of the results: estimation is carried out using the STATA generalized linear models (glm) function which fits models of the general form:  $E(y_i) = x_i\beta$ . To use this command to estimate the fractional response model, the logit is specified as the “link function”, with the “family” binomial. The marginal effects are then given using the mfx command, which is a post-estimation command giving marginal effects estimated at the means of the independent variables

(1) Following Papke and Wooldridge (1996), the conditional distribution of the dependent variable (VI) on the independent variables ( $X$ ),  $E(VI|X) = G(\cdot)$ , is estimated by assuming a particular distribution of the conditional distribution, which is then estimated by maximum likelihood (MLE). The conditional distribution of VI on  $X$  is assumed to be the logistic distribution, i.e.  $G(\cdot) = (e^{X\beta}/1 + e^{X\beta})$

(2) Coefficients are marginal effects (percentages); robust standard errors in parentheses, variables followed by (D) are dummy variables

(3)  $p$ -weights are used in all regressions

(4) \*Significant at the 10% level; \*\*Significant at the 5% level; \*\*\*Significant at the 1% level



**Table 3** Marginal effects of a one SD change in % for regression (2) at different points

	Marginal effect of 1 SD change ( $\times 100$ )	
	At mean values	At pre- dicted value VI9=0.55
<b>Market Niche and Agency</b>		
% Exported	0.039***	0.91***
Import dummy	- 0.044***	- 0.99***
% Exported*import dummy	- 0.044***	- 1.03***
Quality disputes	- 0.213	- 4.92
Monitoring cost	- 0.128	- 2.96
Search & switch cost w.r.t. domestic suppliers	0.201	4.64
Search & switch cost w.r.t. foreign suppliers	0.166	3.84
Missing dummy (domestic)	- 0.873	- 33.12
Missing dummy (foreign)	- 5.422**	- 50.78**
Social & moral cost	0.044	1.01
<b>Output market conditions</b>		
Demand variability	- 0.682***	- 15.78***
Demand uncertainty	- 0.646***	- 14.93***
<b>Financial constraints</b>		
High cost of finance	- 0.472**	- 10.91**
Log issued capital	0.202*	4.66*
Fabrics unit investment cost	- 0.995***	- 23.00***
<b>Access to power (missing category Greater Cairo)</b>		
Alex ( <i>D</i> )	0.253	5.38
NDP governorates ( <i>D</i> )	6.290***	40.20***
<b>Controls</b>		
% Foreign ownership	0.003	0.08
Listed on stock market ( <i>D</i> )	- 0.734	- 26.37
Tax incentive	- 0.038	- 0.88
% Fabrics provided by sister company or branch	- 0.056**	- 1.30**

All marginal effects are shown for a one standard deviation increase from the mean and from the used regressor values, respectively. Variables followed by (*D*) are dummy variables. For purposes of replication of the results: estimation is carried out using the STATA generalized linear models (glm) function which fits models of the general form:  $E(y) = x\beta$ . To use this command to estimate the fractional response model the logit is specified as the “link function”, with the “family” binomial. The marginal effects are then given using the mfx command, which is a post estimation command giving marginal effects estimated at the means of the independent variables

\*Significant at the 10% level; \*\*Significant at the 5% level; \*\*\*Significant at the 1% level

flawed dispute resolution system for TC industry participants (El-Haddad 2008), the significance of this measure is not surprising.

Adding *exports* to the regression confirms the importance of market niche for the vertical integration decision. Exports distinguish the markets being served: the higher output quality market (export) versus the relatively lower quality (domestic).





As indicated above, exports are interacted with the import dummy to indicate whether the firm imported part or all of its fabric requirements.<sup>27</sup> Regression 4 (Table 1) shows that (a) the export variable is significant; and (b) the sign of the interactive term's coefficient is negative, indicating that a firm importing some or all of its fabric requirements moderates the positive effect exports have on vertical integration (indeed it appears to nearly fully offset it). Table 3 indicates that a one standard deviation increase in the percentage exported prior to integration increases the share of inputs produced internally by 0.91% but an equivalent increase in imported fabrics decreases that share by 1.03%.

*Social and moral costs* in all regressions are insignificant, exerting no effect on vertical integration and so quite likely indicating the persistence of personalized exchange.<sup>28</sup>

Results of *model extensions* in (Table 1, regression 4) show that the presence of high *search and switch costs* increases the likelihood for vertical integration *only* if the garment firm was dealing with repeat domestic fabric suppliers. This is not so when the firm's repeat suppliers are foreign. Contrary to the prediction that high search and switch costs—a sign of lock-in—would stimulate a potential hold-up threat to which clothing producers would respond by vertically integrating, no such move appeared when repeat suppliers were foreign.<sup>29</sup>

Similarly, the same result is found in the split sample, search and switch costs are significant only when the firm's suppliers prior to integration were domestic but not if they were foreign (Table 1, regressions 2 and 3).<sup>30</sup>

There are two plausible explanations for this result. The first is that when foreign institutions ensure contract enforcement of quality and delivery for a contracted price, suppliers' opportunistic behaviour is deterred, reducing the necessity for garment firms to integrate. High search and switch costs with respect to foreign suppliers indicate trust and security in the relationship between the clothing firm and those foreign suppliers it deals with repeatedly. In other words, when it comes to foreign suppliers there is lock-in not followed by hold-up. This may not be the case with respect to domestic suppliers, since domestic institutions do not guarantee the same level of enforcement.

The second plausible explanation relates to production quality. If search and switch costs are high with respect to domestic suppliers, the clothing firm is able to ensure the desired quality of fabrics if it vertically integrates. However, if these costs are high with respect to foreign suppliers—giving rise to hold-up—the firm may

<sup>27</sup> The Import Dummy = 1 if fabric imports are more than 0, and 0 otherwise.

<sup>28</sup> Uzzi argues that embeddedness (the process by which social relations shape economic actions) yields positive returns only up to a threshold point, after which it becomes negative (Uzzi 1996). Kranton (1996) has also shown that any organizational structure (e.g. the market, vertical integration) can persist even when it is inefficient (Kranton 1996). The results cannot distinguish whether the perseverance of personalized exchange in the TC industry in Egypt is in fact efficient or has reached the turning point of the efficiency spectrum but they do demonstrate the persistence of personalized exchange.

<sup>29</sup> The coefficient on search and switch cost with respect to domestic suppliers variable is significant at the 11% level but is not with respect to foreign suppliers.

<sup>30</sup> Similar results are found in regressions (5) and (6) though with a lower level of significance. This is because the export variable is also controlling for quality thus introducing multicollinearity.



be technologically unable to match the desired quality level hence internal production of inputs is no longer a sensible response. It is likely that the two justifications jointly explain the difference in significance of the search and switch cost variable depending on whether the supplier is domestic or foreign.<sup>31</sup>

### Niche and Agency: Hold-Up or Excusable Default?

Results have shown that firms serving segments for which quality and timely delivery is essential are more likely to integrate especially when contracts are costly to enforce and lock-in with current suppliers is ensured through the prevalence of high search costs for alternative suppliers and an equally high financial and/or social cost of switching away from current familiar ones. But in the vertical integration literature, these types of agency problems are generally categorized as hold-up, whereby the supplier may exploit the producer's need for timely delivery and/or superior quality of supplies to improve contract conditions (i.e. opportunistic behaviour).

However, the questionnaire cannot distinguish whether disputes and lock-in are associated with opportunistic behaviour or with suppliers' inability to deliver required quality due to circumstances beyond their control such as often occur on account of typical problems of production in a developing country. For instance, during one of the pre-survey interviews, the electricity went off four times during the 3-h appointment (for a total period of 1 h). The respondent explained that he would not want to be harsh on his supplier when it comes to timely delivery: 'see how often the electricity goes out? If this happens to him frequently, even if he is a man of his word he cannot fulfill on time. It is simply out of his control'.<sup>32</sup> This case and similar cases are in line with Fafchamps (1996, p. 61) argument that "delivery problems are blamed on shocks affecting suppliers and are treated by respondents as cases of excusable default".

Results on *output and market conditions* indicate that both market volatility, measured by demand variability, and risk avoidance measured by sales uncertainty prior to integration are highly significant across a range of various specifications (Table 1 regressions (1–6) and Table 2 regressions (1–6)). Calculated at expected VI=0.55, a one standard deviation increase in demand variability reduces vertical integration by 15.8%; a one standard deviation increase in sales uncertainty reduces integration by 14.9% (Table 3).

<sup>31</sup> Multicollinearity is likely introduced by the missing dummies for foreign and domestic suppliers (The missing dummy for foreign supplier search and switch cost takes on the value of 1 if the firm did not deal with foreign suppliers, i.e. if it only dealt with domestic suppliers prior to integration). The correlation coefficient equals (– 0.30) between the dummy and quality disputes which is considered reasonably large. Since the dummy represents observations (firms) that, for example, do not deal with foreign suppliers there is a systematic relationship between the missing dummy and vertical integration, hence also with the other variables in the equation which are meant to have a systematic relation with vertical integration. This co-linearity undermines the significance of the quality disputes variable (Table 1 regression (2)). It is also plausible that the foreign search and switch cost variable is picking up (part of) the quality effect of the quality disputes variable.

<sup>32</sup> Interview with Waleed Abdo, Cairo, Egypt (2 December 2002). Respondents' names have been changed to ensure confidentiality.



This result confirms that the higher the degree of exposure to “natural risk”<sup>33</sup> on the part of the buyer the less the likelihood for backward integration. Were the buyer (i.e. the downstream firm which here is the clothing firm) to be facing uncertainty in the production environment (e.g. sales uncertainty), it would want to spread that risk by asset ownership spreading and so by relying on the market, rather than integrating.<sup>34</sup>

Results on *financial constraints* show the three variables to be robustly significant across a wide range of specifications (Table 1 regressions 1–6; Table 2 regressions 1–6). However, these variables are only significant for firms that dealt foremost with domestic repeat suppliers.

Once again, this result could point to an institutional effect indicating that high cost of finance is irrelevant for firms that have access to foreign capital markets and institutions. A one standard deviation increase in the cost of finance around predicted VI of 55% decreases the share of fabrics produced internally by 10.9% and an equivalent increase in fabrics unit investment cost by 23.0% (Table 3). Thus, financial constraints have a negative *unambiguous* effect on vertical integration in the TC industry in Egypt especially for firms who have dealt with repeat domestic suppliers prior to integration.

Results are robust to a number of alternative specifications. Coefficients in Table 2 regressions (2) and (3) remain stable to different specifications of the size variables (log clothing sales and log net assets).<sup>35</sup> These relationships are also robust to removing insignificant variables (Table 2 regression 4) and adding additional controls (regressions 5–7).

*Access to power and institutional substitutes* variables are all insignificant, as are other measures such as having a company lawyer,<sup>36</sup> which may capture lower costs of dealing with bureaucracy. However, the four governorates dummy—potentially proxying—for NDP membership are strongly robust and significant (Tables 1 and 2 regressions 1 and 4). Compared to Greater Cairo, a one standard deviation increase around the mean increases the share of fabric inputs produced internally by a substantial 40% (Table 3), outperforming any other determinant.

Survey data clearly confirm that firms in those governorates are not just able to become vertically integrated but they also fair better on a self-reported profits indicator compared to their counterparts (Figs. 1, 2).<sup>37</sup>

The survey did not incorporate an explicit question as to the membership status to the NDP neither on the active involvement of the firm CEO if s/he was indeed a member, such data being unlikely to be reliable. But the ability to mobilize this

<sup>33</sup> “Natural risk” is risk arising from variance in the state of the nature.

<sup>34</sup> The pre-determined nature of the variables largely takes care of endogeneity concerns. Nevertheless, sales risk and demand variability may still be endogenous if firms that are not vertically integrated find it difficult to build good reputation with (foreign) buyers and, therefore, face more uncertain demand.

<sup>35</sup> The relationship between size and vertical integration is well established in the literature as vertical integration requires higher fixed costs (see, e.g. Antràs and Helpman 2004). More systematic evidence has been proposed by Hortacsu and Syverson (2008).

<sup>36</sup> Regressions not shown.

<sup>37</sup> I did not use profits in the regression as they are subjectively reported (as opposed to sales or issued capital which were reported from company books).



many citizens from those four governorates to collectively vote for a symbol of the old regime can only come from the largest beneficiaries of that regime. As indicated above, this successful mobilization can only come from an organized body that has access to the thousands of workers of those firms and their families a body that possesses organizational skills that match those of the MB movement. Membership and support to NDP was thus inferred from the observed election pattern.<sup>38</sup> The result is further supported by using separate dummies for every governorate (Annex 6).

An alternative explanation could be that different governorates indicate different institutions.<sup>39</sup> But it is precisely the strong ties with the NDP which were the favourable institutions allowing connected firms to sidestep a largely rigid bureaucracy to integrate and to grow. These results confirm Egypt as belonging to North's et al. "limited access" states, which offer "limited access to the polity, because the polity is based on privilege and unequal treatment" (North et al. 2009, p. 12). Other variables and controls are further discussed in Annex 6.

## Conclusion

Industrial policy can be used to overcome market failures, motivate innovation and efficiency to achieve development goals. Industrial policy has been used to support successful structural transformation in the case of the early industrializers such as Germany and the United States, and the late industrializers such as the Asian Tigers of South Korea, Hong Kong, Singapore and Taiwan followed by other Asian countries such as Malaysia.<sup>40</sup> The optimal market structure for a firm is conditioned by the policy environment, and so what is optimal for the firm in a specific context may be socially sub-optimal. But in the context of government failure then industrial policy can have undesirable, rather than desirable, effects. This has been the case for the Egyptian textiles and clothing industry, where industrial policy restricted the efficient functioning of the market and so prompted an artificial tendency towards a specific organizational structure of vertical integration, that is firms of certain characteristics would thus prefer to *make* their own fabrics rather than buy them from a competitive market.

Partial liberalization meant that the lifting of earlier imposed import bans was substituted with tariff and non-tariff barriers. It also meant that the transition to a market economy was not preceded by the necessary regulatory framework such as the enactment of a competition law, the establishment of a competition and

<sup>38</sup> Not just for the 2012 elections, but also that documented for the 2005 parliamentary elections.

<sup>39</sup> Key judicial informants have strongly opposed the idea that there are significant differences in the quality of the judiciary across governorates since "it abides by the same central rules applicable to all governorates" In addition, judges rotate so any one serving in Cairo or Alexandria will serve in the other governorates. However, in reality this rotation may not necessarily be implemented, thanks again are due to "wasta" or connections.

<sup>40</sup> See El-Haddad (2016) for a critical review of Egyptian industrial policy.



consumer protection authority, or the establishment of modern commercial dispute resolution mechanisms and courts.

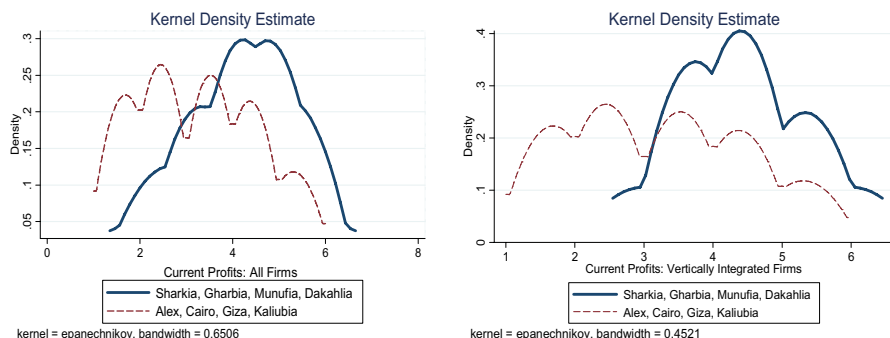
This paper has shown how this partial liberalization has given rise to unfair advantage to some firms, and opened up the space for an undesirable role for political connections and access to power. Those firms with political connections and access to power can sidestep the system of restrictions to achieve the optimal organizational structure for them within the constraints of the system. This option is not available to other firms.

The pattern of protection in the sector induced by the country's hybrid industrial policy has resulted in inefficient upstream production and in an institutional setting conducive to agency problems including supplier opportunistic behaviour. At best this setting has induced poor supplier capabilities. These problems are particularly severe for firms that serve high quality, high fashion segments of the market for which timeliness and quality are an issue. These firms are typically exporters or serve the high-end of the domestic market. Thus, a number of variables indicating market niche are important determinants of vertical integration. This relationship is clear and straightforward for measures of quality and exports, but there are some nuances related to lock-in with suppliers. The presence of high search and switch costs—a sign of lock-in—increases the likelihood for vertical integration *only* if the garment firm was dealing with repeat domestic fabric suppliers prior to integration. Contrary to expectations when repeat suppliers are foreign, implying fabrics are imported, no such move occurred. This result possibly reflects the higher quality of foreign institutions or foreign production quality.

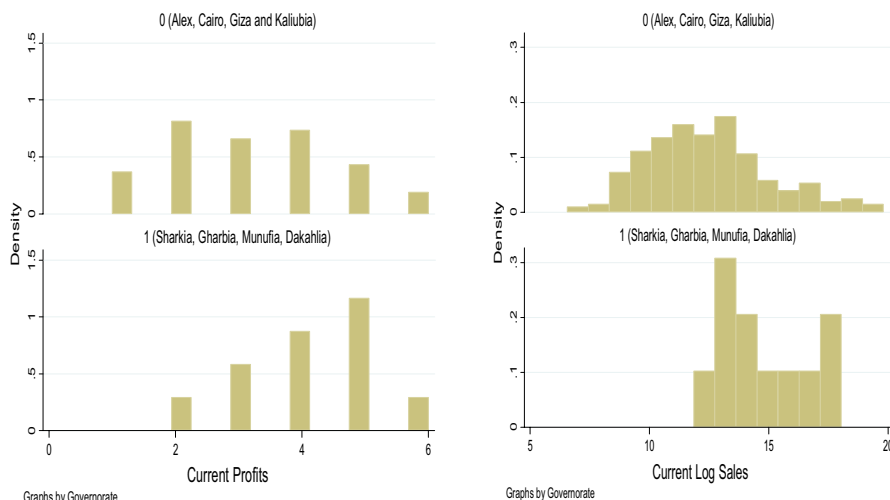
This result has broader implications for current policy direction. Protectionism has been implemented by all Asian Tigers to induce structural transformation. Like Egypt these countries have kept the domestic market captive for their industrial businesses through effective rates of protection in a number of manufacturing sectors, including textiles and clothing. However, unlike the Egyptian case protected firms were both supported and disciplined (cf. Amsden 1989; Haggard 1990, 1995). Firms were not protected in return for their political support, rather they were protected to achieve developmental goals. General Park of South Korea has combined import control with export promotion and inward orientation towards the domestic market with outward orientation (El-Haddad 2010). This perceptive state planning and commitment to economic development was lacking in the Egyptian case.<sup>41</sup> In Egypt, the negative effects of the policy far outweighed any possible positive outcomes. Unconditional protectionism, which is detached from well-specified performance indicators only creates restrictions producing inferior second best organizational outcomes. In the absence of these

<sup>41</sup> Export targeting arrangements were specified in detail by issuing licensing to individual companies allowing them to produce a particular range of products but conditional on the company achieving specified export targets. Many have stressed that the profits from the captive domestic market were used to countersign possible losses in an uncertain export market (cf. Amsden 2001, 2003; Wade 1990). This level of detail in conditionality was not done in Egypt.





**Fig. 1** Kernel density: current profits by governorate and vertical integration status. *Source* Author's calculations



**Fig. 2** Density current profits, log sales by governorate. *Source* Author's calculations

policy induced constraints, arms length relations of frictionless market transactions would be optimal.<sup>42</sup>

Measures of output market conditions, i.e. conditions of the clothing market also affect integration. If demand is volatile, buying rather than making inputs has

<sup>42</sup> Recently collected data based on the Egyptian Industrial Firm Behaviour Survey 2020/2021 (to be launched May 2023) show that incident of vertical integration has largely declined in the context of a more liberal economy compared to the periods covered by the 2004 survey. Only 14.24% of all clothing firms are vertically integrated and just 8.93% when sampling weights are used, compared to the 25% calculated from this survey collected in 2004. In what are called here NDP governorates that incident has fallen to only 3% reflecting—in my view—the new regime's reconstruction of the previous former network of privileges.



risk-spreading benefits, especially in the Egyptian context as there are few other risk-spreading mechanisms available and contracts are incomplete. Hence, variables capturing sales uncertainty and demand variability limit vertical integration. As expected, financial constraints exert a downward pressure on integration.

Business in Egypt suffers from a bureaucracy that is both excessive and inefficient. The inward looking development strategy employed by Egypt since the 1950s resulted in an inflated bureaucracy. liberalization since the 1970s has been largely unsuccessful in reducing the administrative burden on business. Government employees have not changed their mind-set, the old ways, including carelessness, petty corruption and control for control's sake, remained deeply ingrained in the system.

In order to survive firms often have to ingratiate themselves with government, gaining access to political networks and key political figures to avoid getting bogged down in the rigid system of controls, using the arbitrary and discretionary decision making system to their favour. Under these circumstances, those who have done best in business have been those close to centre of political power. Those directly linked to the party, including the relatives of the former President's family and their strongest supporters, prospered, whilst the businesses of others foundered against the wall of bureaucracy and red tape. The ability of businesses to grow and sidestep transaction costs through vertical integration meant being able to negotiate government obstacles such as capital, licenses and industrial land to successful business. Those with access to political power are those best placed to do so.

In the Presidential elections of May 2012, the only four governorates to return a majority for the candidate identified with the former ruling party were precisely those four governorates with a significant positive dummy in the VI regression. A very plausible implication is that these areas have owners of large firms who benefited from NDP patronage. And these owners mobilize their workers and their families to vote for the 'NDP candidate'. There are alternative explanations that cannot obviously be ruled out. These cannot be accurately addressed with the available data.

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