Non-tariff measures in the MNA region: Improving governance for competitiveness

Olivier Cadot, *University of Lausanne*
Patricia Augier
Julien Gourdon
Mariem Malouche, *World Bank*
Non-tariff measures in the MNA region:
Improving governance for competitiveness

Patricia Augier
Olivier Cadot
Julien Gourdon
Mariem Malouche

December 2011

Abstract

This note reviews what we know about NTMs affecting the regional and global trade integration of MNA economies. In MNA countries, NTMs contribute to segment markets and to raise the domestic prices of affected products, generating countervailing demands for other distortionary policies to contain the cost of living. The combination of these distortionary measures generates inefficiency and policy deadlock. Significant progress has been made, but reforms have remained superficial—from the adoption of technical improvements in border management without a change of enforcement culture, to the creation of dialogue structures that remain largely empty shells for lack of political drive. The note proposes an agenda for reform revolving around the principle of regulatory governance and suggests leads for G8 countries to support the agenda.
1. Introduction

Resource-poor MNA countries are in a double bind. On one hand, they are engaged in a race against time to generate enough jobs to absorb large cohorts of young people entering working age. Failure to deliver those jobs may mean renewed political upheaval, whether against a democratic backdrop or not. On the other hand, like Latin American countries in the 1980s, MNA countries today do not possess a clear competitive advantage on world markets: They do not have the educational/R&D infrastructure to compete in high-tech industries; but they do not have the flexible and cheap labor force it takes to compete in labor-intensive industries against China or Bangladesh. Also, like many Latin American countries in the 1980s, they have exchange rates which, while not necessarily out of equilibrium for their economies as a whole (e.g. including structural exporters like tourism or mining), are still too strong for their fledgling manufacturing sectors.

The primary source of competitive advantage of MNA countries is that they are located close to large markets. This can help them attract assembly activity in industries where time-based competition is important. In order for MNA countries to leverage this potential competitive advantage, everything, from infrastructure to regulatory environments to private-sector management, must be geared toward efficiency and reliability, so that all aspects of supplier performance are “programmable” for large buyers.

MNA countries are, today, far from that. Infrastructure is inadequate, the business environment is bloated with “legacy regulations”, trade facilitation is not up to international standards, there is not even the start of a competitiveness-oriented dialogue between private and public sectors, and private-sector management is far from the lean, aggressive culture of South-East Asia.

All this can—and must—change, but reform efforts have, so far, remained too timid to make a difference. Understanding why is crucial to providing effective advice. Many economic and political factors contribute to the deadlock, but regulations, and among them non-tariff measures (NTMs), are a non-negligible part of the picture. Morocco is a case in point. Econometric analysis carried out for this note shows that the Kingdom’s arsenal of NTMs substantially raises the domestic price of affected products, potentially contributing to poverty and social discontent. At the same time, the government has put in place a system of import subsidies, mainly on fuel, with the opposite aim—to contain the cost of living. These subsidies are regressive, as fuel consumption correlates with income at the household level, and their cost has over time ballooned to a whopping 18% of the budget or 4.3% of GDP at the onset of the global financial crisis (Central Bank 2010). Worse, they have a high exchange-rate elasticity, making any attempt at targeting a more realistic exchange rate for export-oriented manufacturing industries (where the needed jobs could be created) fiscally difficult. Thus, the combination of price-raising and price-containing NTMs generates a policy impasse whose ultimate cost is jobs in export-oriented industries.

NTMs are a particular instance of a wider syndrome of heavy and ill-targeted intervention in the economy, resulting in inefficiency and sometimes even paralysis. In that sense, they provide an entry door to a broader agenda of regulatory reform, with a double aim: (i) to reduce trade costs directly, and (ii) to contribute to creating a culture of competitiveness-oriented dialogue between public administrations and the private sector, in which issues such as those discussed above could be tackled effectively.

The rest of this note is organized as follows. Section 2 reviews what we know about the trade costs generated by non-tariff measures (NTM). Section 3 presents an overview of the evidence for MNA,
based on new data and econometric analysis. Section 4 briefly discusses issues related to NTM facing MNA exporters in destination countries and harmonization issues. Finally, Section 5 proposes a set of prioritized policy recommendations for MNA countries and the G8.

2. NTMs and market access: What do we know?

Whatever their form and intent, like all trade instruments, non-tariff measures create wedges between domestic and world prices. In the case of QRs, these wedges generate rents for distributors or holders of licenses. In the case of technical regulations, the wedges will typically (though not always) reflect compliance costs, making NTMs “dissipative barriers”, although differences in compliance costs may generate rents for some firms.

Conceptually, NTMs can have two main direct effects on the home economy. When imposed on consumer goods, they affect poverty and the distribution of income, with sometimes nontrivial effects, in particular when domestic producers of substitute products have market power, which is likely to be the case in MNA countries given their small market sizes. When imposed on intermediate products, NTMs affect the competitiveness of domestic firms. Recent work (Augier et al. 2011) shows that firms benefit from imported intermediates through higher productivity when they have the in-house skills to make good use of them. This suggests that NTMs making foreign sourcing costlier can reduce productivity growth.

How NTMs affect market access and competitiveness is typically assessed along two dimensions: Their incidence, measured by either the frequency ratio (the proportion of product categories covered by one or more NTM) or the coverage ratio (the proportion of imports covered), and their severity, measured by ad-valorem equivalents (AVEs). Estimation of either incidence or severity requires prior measurement, which has historically proved difficult because NTMs are, unlike tariffs, complex legal instruments with multiple objectives. Several sources of information are available, none of which perfect. Subjective measurement is provided by private-sector surveys, and we will use this type of evidence in our discussion, in Section 3, of the effect of NTMs in the MNA region. Surveys should be interpreted carefully, as respondents are sometimes imperfectly informed and sometimes manipulate answers strategically. Moreover, surveys rarely have rigorous sampling frames and are therefore informative rather than representative.

Objective measurement is provided by official sources. The first and foremost source is notifications of measures by member states to the WTO secretariat. These notifications, which are mandatory but subject only to weak disciplines, are meant to provide other members with time and information to react to measures with the potential to restrict market access. However the process suffers from various flaws, among which a basic incentive problem—by notifying, countries expose

---

1 Product categories are customarily defined at the harmonized system’s 6-digit level, which comprises a nominal total of over 5,000 goods. Most countries trade fewer than that.

2 An ad-valorem equivalent is the rate of an ad-valorem tariff that would have the same effect on imports. That level can be assessed using two broad families of methods. Price-based methods typically use variants of the so-called “price gaps” method, which compares the price of a good affected by an NTM in the affected import market with its price in a comparator market where no NTM is applied. Examples of price-based methods include Andriamananjara et al. (2008), Fontagné and Mitaritonna (2009), or Cadot and Gourdon (2011). Quantity-based methods use observed variations in trade flows, preferably at the product level, to infer how high are the barriers created by NTMs, once other trade barriers (tariffs and so on) are controlled for. A prominent example is Kee et al. (2009).
themselves to criticism. Thus, coverage is haphazard; for instance, since the 1994 Marrakesh agreement, Morocco has notified only 26 measures. Moreover, most notifications are too vague in their wording to be exploited for statistical purposes.

Under the impulse of UNCTAD, a formal database of NTMs is progressively taking shape. A first wave of data collection led to the TRAINS database, with one year of data (2001) for about 100 countries. A new wave of data collection was initiated by the Multi-Agency Task Force (MAST), based on a new classification of measures, in 2009. After a pilot phase, data collection is now progressing rapidly. In particular, for the MNA region, 2010 data is available for Morocco, Tunisia, Egypt, and Lebanon. Partial data is also available for Syria. The data includes measures coded according to the MAST classification with the HS6 codes of all products affected, in addition to legal references.

Coverage ratios reported in analytical studies have typically been rising, from one third of imports (34% for industrial-country imports from developing countries in Nogues et al., 1986) two over half (57% in Kee et al., 2009). Because of the data issues just discussed, it is not possible to ascertain whether this rise is due to more widespread use or to better measurement, but the hypothesis of rising use is consistent with the observation that NTM use tends to rise (in particular for food products) with income levels. One of the key results coming out of recent work (see e.g. Disdier, Fontagné and Mimouni 2008) is the prevalence of product standards in agri-food trade, a statistical observation that is consistent with private-sector perceptions. More broadly, standards and technical regulations seem to have generalized whereas command-and-control instruments like quantitative restrictions receded as major forms of NTMs. We will see that this observation applies to the MNA region.

In terms of severity, Kee et al. (2009) find, across 4,545 econometric regressions at the product level, average AVEs of 9.2% (using simple averages) and 7.8% (using trade-weighted ones). These estimates are somewhat lower than those of Bradford (2003) who finds average AVEs ranging between 7.8% (Canada), 28% (UK) and 52% (Japan). If one takes out products with no NTMs, averages climb to 39.8% and 22.7% respectively in Kee et al. These higher orders of magnitude are comparable to those obtained using price-based methodologies by Andriamananjara et al., although individual estimates vary substantially (for instance, Andriamananjara et al. find a 73% average AVE for apparel, against only 20% in Kee et al.). Kee et al. also observe that, unlike tariffs, NTM AVEs tend to rise with income levels, reflecting stiff agricultural NTMs in rich countries. In sum, the picture emerging from estimated AVEs is one with substantial peaks—larger than for tariffs—and overall averages between 5% and 10%.

Estimates of the trade-reducing effect of NTMs are largely in line with AVEs. Using a gravity equation, Hoekman and Nicita (2008) find an elasticity of trade to NTMs around one-half, implying that cutting the AVE of NTMs in half, from around 10% to around 5%, would boost trade by 2-3%. Also on the basis of a gravity equation, Chen, Otsuki and Wilson (2006) find a stronger impact of standards on developing-country exports. Testing and inspection procedures reduce exports by 9% and 3% respectively. Access to relevant information about standards seems key, as informational barriers by themselves reduce trade by 18%, and firms with foreign capital—typically larger ones with better access to information—are less affected.

---

3 Kee et al.’s methodology makes it possible to estimate different AVEs for the same product depending on the importing country’s factor endowment or income level.
Harmonization raises specific issues. Czubala, Shepherd, and Wilson (2007) found that the trade-inhibiting effect of standards is reduced when they are harmonized. These results were confirmed by Baller (2007) who found that mutual-recognition agreements had a strong positive effect on both the probability that bilateral trade takes place and on its volume. The policy implications emerging from this body of work are thus fairly clear: compliance costs matter, and harmonization/mutual recognition agreements that reduce those compliance costs—without necessarily watering down the substance of the measures—have a positive impact on trade flows. However, Cadot, Disdier and Fontagné (2011) showed that there is more to it: When Southern countries harmonize their standards with Northern ones, they may impose higher costs to domestic firms, penalizing them on third markets where those standards bring no competitive advantage. We will return to the issue of harmonization in Section 4.

As for trade facilitation, Djankov, Freund & Pham (2006) estimate that a one-day delay in the shipment of exports means a reduction in trade of at least 1%. In the case of agricultural products, the reduction averages 7%. Wilson, Mann & Otsuki (2003) simulated changes in trade flows among APEC member economies to improve efficiency in the use of ports, the customs environment, the use of e-business tools and certain regulatory harmonization measures at the border (regulatory environment). The combination of these measures yielded a whopping 21% rise in trade ($254 billion) in the APEC Region. The highest impact measures were those related to port efficiency and the regulatory environment. Indeed, Francois, Van Meijil and Van Tongeren (2003) noted that trade facilitation measures typically bring higher benefits than most measures currently under discussion in the Doha Round’s market-access negotiations.

All in all, the cross-country evidence suggests that non-tariff measures represent, on average, substantial barriers to market access. Given that they often have non-trade objectives (public health, the environment, or other), a balanced assessment of the need for reform should take these objectives into account. However, sometimes they are just protectionist instruments in disguise. Because of their complexity, they have a strong obfuscation potential and are therefore easily captured, suggesting that the search for transparent governance processes and checks on their illegitimate use can have strong returns in terms of trade openness.

3. NTMs in the MNA region: New evidence

Because trade in the MNA region suffers from many impediments, not least of which politics and poor infrastructure, NTMs are not the most salient barrier to regional integration. However, their influence is insidious, through higher costs, arbitrariness, a potential for protectionist drift, and a general feeling of intrusive, business-unfriendly, unaccountable bureaucracy. Yet, until recently little was known about their real prevalence and severity. This section provides an overall picture based on newly available data. Three stylized facts emerge from the analysis: (i) NTMs cover a substantial chunk of MNA imports, but the region is no outlier in terms of coverage; (ii) coverage has been diminishing, especially in terms of old-style “command-and-control” NTMs (QRs and the like); (iii) where statistical analysis yields significant results, price gaps are very substantial, implying strong market-segmentation effects.
3.1 Official data

3.1.1 How prevalent are NTMs in the MNA region?

On the basis of data available for five MNA countries, NTMs cover, on average, about 40% of the products imported by the region (from itself and the rest of the world) and 50% of the value of its imports. These frequency ratios are quite similar to what is observed in other regions of the world, and significantly lower than the E.U.’s. Strikingly, they are substantially lower than the levels recorded in the TRAINS database for the year 2001, in particular as concerns old-style command-and-control instruments (quantitative restrictions, prohibitions, or anti-competitive measures).

Official data can be analyzed on a systematic basis for the first time since 2001 thanks to a joint effort of the World Bank’s Trade division, UNCTAD, the African Development Bank, and the Femise Institute which coordinated data collection on the ground in the MNA region.

A first pass at the data shows that the MNA region does not stand out as an outlier compared to the average of 29 countries for which data is currently available (first horizontal bar in Figure 1) in terms of either NTM frequency ratio (dark grey) or coverage ratio (pale grey). By contrast, the E.U. stands out as a heavy user, an issue we will return to in Section 4.

NTM frequency ratios (in dark grey) vary substantially across countries in the region, with the lowest rates for Lebanon (15%) and Tunisia (22%), followed by Morocco (25%). In terms of coverage ratio, Morocco stands as the least affected (21%), implying that, compared to other MNA countries, Morocco tends to impose NTMs on relatively low-value items.

![Figure 1](image)

**Figure 1**
NTM frequency and coverage ratios, selected countries

Note: Measures coded A to E in the MAST classification.
Source: World Bank/UNCTAD NTM data

Figure 2 shows a very tentative comparison between core NTB frequency ratios shown in Table 1 of Kee et al. (2009) using TRAINS data for 2001 and frequency ratios observed in the 2010 data. Core NTBs as defined by Kee et al. include price controls, quantitative restrictions, monopolistic measures, and technical regulations. We have tried to stay as close as possible to this using the
MAST classification. The result is striking: frequency ratios are down in all countries for which both periods are documented; marginally in some cases like Egypt, or drastically in some like Morocco (Tunisia and Lebanon being in between these two extremes). This is interesting, as it suggests that some changes have been implemented over the last decades in terms of reducing the incidence of command-and-control instruments like quantitative restrictions, prohibitions, and anti-competitive measures.¹

The reduction would be even more marked if technical regulations (SPS and TBT) were not included, as the use of such measures has spread. As a matter of fact, technical regulations have replaced all other measures in the majority of cases. This raises an interesting question, which can be answered only through case studies on the ground. On one hand, this can be taken as a modernization of the NTM apparatus in all MNA countries, marking a shift from protectionist measures (NTBs) to regulatory ones (NTMs). On the other hand, it could also hide the increasing use of technical regulations as barriers to trade, through complex design that ends up being discriminatory *de facto* although not *de jure*.

![Figure 2](image)

*Figure 2*

**Frequency ratios, core NTBs, 2001-2010**

Source: World Bank/UNCTAD NTM data

Frequency and coverage ratios bunch together products covered by one measure and products covered by many ones. Figure 3 attempts to break this down by type of measure,² the assumption being that several measures of different types imposed on the same product may generate a particularly heavy compliance burden. Along that dimension, it can be seen that Tunisia stands out as a user of multiple measures, suggesting a possible lack of internal coordination between government administrations.

---

¹ Some import monopolies remain on products such as medications, cereals, oil and sugar in Tunisia, which are managed by Tunisia’s *Direction Générale du Commerce Extérieur*. A number of tariff-quotas are also imposed on food products.

² Types of measures are defined here at the 3-digit MAST classification level, i.e. A110, A120 etc., which is, for most measures, the finest level of classification.
Most of the region’s NTMs are applied on a non-discriminatory and there is no evidence that they affect regional trade by design. They might still affect it de facto if their incidence was borne disproportionately by products accounting for a large part of intra-regional trade. Figure 4 verifies this conjecture by plotting NTM coverage ratios in terms of total imports (horizontal axis) vs. intra-regional imports (vertical axis) for all countries with data worldwide, regions being defined by the World Bank’s categories. Points above the 45° line mark NTM structures falling disproportionately on intra-regional imports, and vice versa. It can be seen that Egypt and Syria—whose data must be interpreted very cautiously—are the only two countries with in MNA with NTM structures penalizing regional trade. Morocco, Tunisia and Lebanon are outliers in the other direction—with NTM structures penalizing out-of-region imports.
Econometric estimation suggests that the wedge introduced by NTMs between domestic and world prices is typically large in Morocco and substantial, albeit lower, in Tunisia. SPS measures are responsible for a good chunk of the ad-valorem equivalents (AVEs) in Morocco, whereas other technical regulations are more important in Tunisia.

How large is the wedge introduced by NTMs between domestic and international prices in the MNA region? A first answer can be obtained by simply looking at “price gaps” defined as the proportional difference between domestic and world prices, product by product. Doing this over a sample of products and countries for which we have price data using the World Bank’s International Comparison Project generates a distribution which, by construction, is approximately centered around zero. Let us now superimpose on this distribution a second one with only those products which, in Morocco, are covered by SPS regulations or price-based measures (NTM categories A and D in the MAST nomenclature). The two distributions are shown in Figure 5, with frequency on the vertical axis and price gaps on the horizontal (where “0.5” means a 50% price gap and “1” means 100%). Clearly, the distribution for NTM-ridden products in Morocco looks like a rightward shift of the overall distribution, suggesting that price gaps are systematically higher—and by a substantial margin—than average.

Such a simple-minded comparison of distribution can be misleading since we are comparing products which can be different, so a proper comparison must rely on econometric methods controlling for product and country heterogeneity factors.

Figure 5
Distribution of price gaps, whole sample vs. products covered by SPS and price measures in Morocco

The econometric procedure is briefly summarized in Appendix A. Results are displayed by country in Tables A1 for Morocco and A2 for Tunisia. Results for other MNA countries were not statistically significant. They should be interpreted with caution, given that they are obtained by

---

6 It is not exactly centered around zero since it measures the difference between domestic prices and average prices product by product (rather than subtracting the overall mean).
aggregating NTM coverage ratios up to the fairly broad level of ICP products, resulting in a loss of precision. They may also suffer from endogeneity bias, although the use of country and product effects controls for many possible omitted variables.

Given all the necessary caveats, the results suggest very high AVEs in Morocco, in particular in comparison to Tunisia. In Morocco, total AVEs range from zero to over 373% (rice), with the bulk of the effect generated by SPS measures (category A). This is to be expected given that the ICP database oversamples food products. In Tunisia, AVEs range from zero to 105.2% (lamb meat), with only technical regulations (category B) and price-control measures (category D) showing up as statistically significant. Simple averages across products in the ICP database (which are not representative of the average household consumption basket, as ICP products are chosen for their international comparability) are 62.6% for Morocco and 13.4% for Tunisia. Once zero-AVE products are taken out, simple averages rise to 87.6% and 37.4% respectively. That is, in Tunisia, relatively few products are affected by NTMs, but for those products the implied price wedge is substantial, although much less so than in Morocco.

3.2 Private-sector perceptions

Private-sector perceptions as reported in a 2008 survey (Hoekman Zarrouk 2009) largely confirm both (i) the relatively stiff regimes of Morocco and Tunisia, whose AVEs came out significant in the econometric estimation, and (ii) the improvement suggested by the official data. Respondents’ estimates of trade costs in the region are low: 6% on average, 7% in Morocco and 11% in Egypt. Given the overall focus of the survey on trade facilitation, these estimates are likely to reflect direct compliance costs rather than the total price increase due to changes in market structure, sourcing mix, and product mix that AVEs pick up. Be that as it may, respondents reported substantially reduced trade costs compared to an earlier wave in 2001.

Technical regulations, in particular in terms of packaging and labeling, were perceived to be problematic in foodstuff trade, in particular when importing into Egypt, Syria and Lebanon. Testing and certification requirements were also considered haphazard. However, only 30% of the respondents considered technical regulations to be a major hurdle to trade in the region. Most of the problems came from enforcement on the ground, including border inspections. Figure 6 shows reported inspection rates, by importing country. Egypt, Tunisia and Morocco stand out as the countries applying the highest inspection rates, although these rates are not unreasonable. For instance, Tunisia adopted in 2006 a risk-profiling system whose objective was to contain the

---

7 The case of rice is particular. In September 2007, Morocco’s rice producers requested the adoption of “safeguard measures on rice originating from Egypt” (see http://www.maroc-trade.gov.ma/ReglementationImportation/MesuresCorrectivesImportation/AvisPublicsNouvelles/Documents/Sauvegarde/Rapport_riz-fr.pdf, §3), an awkward request since safeguard measures, unlike anti-dumping, must be applied on an MFN basis rather than on a bilateral one. The Ministry of Foreign trade rejected the request in November 2008 and instead put in place a surveillance system. The market outlook changed substantially since then: In April 2011, Morocco’s Foreign Trade Minister Abdellatif Maazouz called during a visit to India for enhanced exports of Indian rice to Morocco (India currently enforces an export ban on non-basmati rice). See http://post.jagran.com/morocco-seeks-rice-wheat-supply-from-india-1303995783. In the econometric estimation, the 374.7% AVE is obtained by compounding a 112.3% AVE for SPS measures (cat. A) and a 123.6% AVE for price-control measures (cat. D).

8 This is the second-highest AVE. The maximum value is 128.1% for pork meat, a special case for obvious reasons. Meat imports are marginal in Tunisia, which has a strong domestic cattle production making it almost self-sufficient WTO 2005)
proportion of “red-channel” shipments (subjected to mandatory inspection) to no more than 10%, which is exactly the average given by respondents to the 2008 PAFTA survey. In some cases, problems stemmed from things as simple as customs officers being unable to understand shipment document in English.

**Figure 6**
Private-sector reported inspection rates, by country (lowest and highest rates reported)

![Graph showing inspection rates by country](image)

Source: Adapted from Hoekman and Zarrouk, Table A-5.

In general, red tape is a recurrent complaint in the region. Figure 7 shows the time spent dealing with bureaucratic issues, by countries. Tunisia is now in the lower tail of the distribution, but Egypt and Morocco are, again, among the worst performers, although, again, the figures reported by respondents are not outrageous. Almost two thirds of the companies surveyed have more than 50 employees, so spending, on average, 30 man-days per year dealing with administrative issues (Morocco) or 25 (Tunisia) may not be a first-order impediment to business (for a firm with 100 employees, we are talking about one sixth of one percent of total man-hours). Again, however, this is only a direct measure of the cost involved in fixing day-to-day problems and is likely to overlook the deeper problems stemming from induced changes in sourcing and import costs.

**Figure 7**
Man-days spent per year resolving problems with customs and tax administrations
All in all, private-sector operators signaled concerns not just about the measures themselves, but also about their enforcement on the ground, calling for effort aimed at improving both regulatory design and border-management procedures.

### 3.3 Institutional aspects of the regulatory environment

The improvements observed over the last decade in both official data and private-sector survey results can be traced to reform efforts which have proceeded at an uneven pace in the region.

In Tunisia, for instance, the enforcement of technical regulations at the border was considered, in the mid-2000s, as one of the costliest bottlenecks for importers (E-Marsoum Int. 2008). Several reforms were introduced in 2004, including the re-engineering of border-management procedures, computerization of most of the paperwork, and reform of the administration in charge of standards and intellectual property (INNORPI). However, according to private-sector operators, enforcement on the ground is still haphazard, discretionary, and untransparent. In Egypt, progress is even slower, and the Competitiveness Council has not come up, in spite of USAID funding for NTM transparency and streamlining, with a credible action plan.

In Morocco, two structures exist to channel dialogue between national authorities and the private sector. The Ministry of Foreign Trade is assisted by the Commission consultative des importations (CCI) is composed of representatives of several ministries, Customs, and representatives of professional associations, the Federation of Chambers of Commerce, Industry and Services, the Federation of Chambers of Agriculture, and the Federation of Chambers of Handicrafts and deals with tariff policy and contingent protection. The Conseil national du commerce extérieur (CNCE), established in 1996, is composed of representatives of the Government and economic operators and deals with foreign trade relations and competitiveness. Although some progress has been achieved in reducing regulatory interference in international trade, none of these structures has emerged as a powerful reform driver or even credible counter-power.

---

9 See WTO (2009).
Moreover, as noted in the introduction, the Moroccan government maintains price-raising measures simultaneously with other distortionary measures whose aim is to contain the cost of living. Prominent among those is an array of price measures, in particular on fuels, which amount to import subsidies. Figure 8 shows that these measures are extremely costly, peaking at 4.5% of GDP and 18.3% of current expenditures in 2008.

![Figure 8](image)

The cost of Morocco’s import subsidies, in percentage of GDP

Source: Central Bank.

These subsidies are regressive, as owners of gas-guzzling cars cash in a disproportionate share of the subsidy, and reward negative externalities, contributing to urban traffic jams and pollution. Worse, because they are contingent on dollar oil prices, they have both a high built-in volatility, which impacts fiscal management, and high elasticity to the exchange rate. For this and other reasons, they loom in the background of any discussion of the exchange rate and contribute to policy deadlock. Yet, it is clear that the equilibrium exchange rate for the economy as a whole, including the phosphates and tourism sectors, is likely to be too strong for the weak manufacturing sector. If jobs are to be generated in manufacturing, any medium-term competitiveness agenda must start with a competitive exchange rate.

4. Measures facing MNA exporters

4.1 Regulatory barriers to market access

We saw in Figure 1 that the E.U. imposes NTMs on 83% of its products and 89% of its imports, making it the champion of NTM use in the sample of 30 countries for which data is available. The vast majority of these measures are SPS and technical regulations. Indeed, a recent survey of Tunisian private-sector operators (E-Marsoum Int. 2008) shows that technical regulations, conformity assessment, and SPS measures are perceived as the biggest hurdles by exporters, irrespective of destination, with about half of the exporters (to the E.U. or other Arab countries) pointing to “inefficiency or even obstruction” in the border administration of technical regulations. One third of the problem cases has to do with conformity-assessment procedures and another 22% has to do with testing and certification. Among SPS measures, hygienic requirements, (A250 in the
MAST nomenclature), testing (A330) and traceability requirements (A220) come out as the most frequent source of problems. This is to be expected given the rising demands of consumers and retailers (in the E.U. and elsewhere) in terms of all three.

SPS measures including HACCP, EUREPGAP, and BRC are recurrent sources of complications and costs for MNA-based exporters on the E.U. market (see e.g. Mandour, 2006; Aloui and Kenny, 2004, or Ghoneim, 2009). The cost of EUREPGAP certification is over $1’000 per farm, and to that must be added the cost of investments in equipment and infrastructure needed to comply with traceability, record-keeping, waste and pollution management, worker health, and environmental issues. In the citrus sector, for instance, this makes EUREPGAP certification unaffordable for farmers with less than a hundred hectares in vegetables and tomatoes or even several hundred hectares in citrus production (Alouy and Kenny 2004).10 Traceability adds to production and exporting costs (Frohberg, et al. 2006), and also has the side-effect of shifting the burden of quality risk management upstream to the farmer, with potentially adverse consequences on income security. In addition, some MNA-based exporters face particular difficulties due to “home-grown” problems such as brown-rot disease in fresh potatoes and high aflatoxin levels in nuts from Egypt (Ghoneim 2009), and it is sometimes difficult to ascertain whether highly restrictive E.U. regimes at the product level reflect extreme risk aversion, demands for protection from E.U. domestic interests, or a mixture or both.

Given the sensitivity of SPS issues in the E.U., it would probably not be realistic to expect any relaxation of current rules in the name of market access for MNA countries. However, what the E.U. can provide is financial and technical assistance (TA) to help MNA producers, in particular small-scale ones, adapt their products to both private and official standards. In agriculture, packing houses are one of the key points in the value chain that should be targeted for quality training. The E.U. has indeed put in place TA programs, including the Pesticides Initiative Program (PIP) and a number of Mise à Niveau (upgrading) programs. However, the efficacy of these programs in MNA remained to be evaluated.11

By contrast, rules of origin are rarely invoked as a source of difficulties by exporters. For instance, E-Marsoum Int. (2008) reports that only 2% of the problems reported by exporters to France had to do with rules of origin. Thus, although recent reforms of the E.U.’s system of rules of origin toward simpler requirements, in particular for textile & apparel products, are welcome, they are unlikely to make a big difference for MNA countries, either in terms of access to E.U. markets for manufactured products or in terms of setting up regional production networks in the MNA region. Many hurdles would have to be cleared before rules of origin made a difference.

---

10 Using data collected on the ground, Aloui and Kenny (2004) found that the cost of complying with the EUREPGAP standard was 8 percent of total farmgate cost for a highly efficient Moroccan producer, and possibly twice more for an average farmer. Because production costs represent only approximately one-third of the product’s FOB price (which include post-harvest, transport, and marketing), the share of compliance costs shrinks to 3% for an integrated efficient exporter. Thus, the point is that EUREPGAP has a potentially adverse effect for small farmers and may thus have a regressive impact; but it is difficult to make it a primary barrier to market access. Indeed, Moroccan farmers interviewed by Aloui and Kenny also recognized that it has a positive impact on quality management.

11 Mise à niveau programs have not been evaluated formally, and anecdotal evidence gathered in the course of missions suggests that they are dysfunctional in Morocco. The only formal impact evaluation of the PIP is on Senegalese horticulture exporters (Jaud and Cadot 2010). It found that, if Senegal’s horticulture exports indeed grew vigorously after the program’s implementation, a comparison of the performance of beneficiary firms with that of a control group showed a statistically significant effect only on horticulture exports to the E.U. with no externality on other exports.
4.2 Harmonization, a double-edged sword?

Harmonization and mutual-recognition agreements (MRAs) are key ways of reducing the market-fragmentation effect of technical regulations. However, they raise some well-known issues and some not-so well-known.

MRAs require a high degree of confidence between national regulatory systems, which typically go with similar levels of income and deep integration. Given the current capabilities of regulatory agencies in MNA countries, MRAs with the E.U. are likely to be a medium-term goal at best. Information on MRAs in MNA is conflicting. El Marsoum (2008) indicates that MRAs have been signed between Tunisia, Egypt, Morocco, Libya and Syria whereas Ghoneim (2011) states that neither Morocco nor Tunisia has any MRA.

Harmonization with Northern standards can be a way for Southern countries to reduce quality uncertainty and hence to improve market access. However, there may be a price to pay. Disdier, Fontagné and Cadot (2010) argue that by adopting stiff Northern standards as part of free-trade agreements (FTAs), Southern countries may end up raising the costs of their domestic producers and pricing them out of other Southern markets where such stiff standards confer no competitive advantage. They show, on the basis of a gravity equation, that this effect is statistically traceable in trade flows and reinforces the hub-and-spoke structure of international trade flows, with spokes (the Southern partners of North-South FTAs) less able to “trade out” with other Southern countries out of their bloc.

Some E.U. FTAs with MNA countries explicitly provide for alignment of partner-country regulatory system on the “acquis communautaire”. For instance, Article 51 of the EC-Morocco FTAs states that

“[t]he Parties shall cooperate in developing: (a) the use of Community rules in standardisation, metrology, quality control and conformity assessment; (b) the updating of Moroccan laboratories, leading eventually to the conclusion of mutual recognition agreements for conformity assessment; (c) the bodies responsible for intellectual, industrial and commercial property and for standardisation and quality in Morocco.

Article 51 of the EC-Tunisia FTA is identical. Article 40 of the EC-PLO FTA contains a harmonization clause worded in similar language: “The objective of cooperation will be to narrow the gap in standards and certification. In practical terms cooperation will take the form of the promotion of the use of Community technical regulations and European standards and conformity assessment procedures”. Likewise, Article 68 of the EC-Jordan agreement states that “[c]ooperation in this field will be aimed in particular at: (a) increasing the application of Community rules in the field of standardization, metrology, quality standards, and recognition of conformity”. In such cases, it seems to be the intention of EU negotiators to encourage partners to adopt EC regulations even for products aimed at the domestic or other, non-EU export markets.

The EC-Egypt agreement contain no suggestion of that type. Instead, harmonization is expected to take place on the basis of international standards. Nonetheless, the Egyptian Organization for Standardization and Quality (EOS) claimed in 2008 that it had completed the harmonization of over 80% of its technical regulations with those of the E.U., and in January 2008 EOS became an affiliate member of CEN, the European standards body (Ghoneim 2009).
Thus, MNA countries are on a path of harmonization with E.U. technical regulations which can be expected to have two conflicting effects. On one hand, it may facilitate access to E.U. markets and acceptance of MNA products by retailers and consumers. On the other hand, it may contribute to high costs and therefore to market-share losses on Southern markets where E.U. standards are overkill. In view of the wording of E.U.-Morocco and E.U.-Tunisia FTAs, it is probably too late to question alignment on the *acquis communautaire*, at least in the medium run. However, what MNA regulatory authorities may want to consider is to adapt the speed of convergence to the need of particular industries, depending on the existing and predictable evolution of sales patterns. In sectors where E.U. markets constitute the primary area of expansion, harmonization should be prioritized. In sectors where Southern markets represent a larger potential for expansion, harmonization might be made a little slower, or adapted with escape clauses for exports when needed (and useful).  

5. Conclusions and policy recommendations

The brief factual analysis presented in this note suggests a policy diagnosis along the following lines:

1. In MNA countries, NTMs contribute to segment markets and to raise the domestic prices of affected products, generating countervailing demands for other distortionary policies to contain the cost of living. The combination of these distortionary measures generates inefficiency and policy deadlock.

2. Significant progress has been made and is reflected in private-sector perceptions, but reforms have remained superficial—from the adoption of technical improvements in border management without a change of enforcement culture, to the creation of dialogue structures that remain largely empty shells for lack of political drive.

3. In G8 countries that are the main outlets for MNA products, in particular the E.U., surveys of MNA exporters regularly return SPS regulations as the main obstacle to market access. However, SPS measures have strong non-trade justifications and are likely to be too sensitive to be brought to any negotiation table.

Notwithstanding the difficulties encountered in past reform efforts in MNA countries, the authors of this note believe that now is the time to build and support a reform agenda around the notion of regulatory governance. There is a sense of urgency to this, as NTMs are “latent protectionist weapons”. In good times, they are mostly set through technical processes meant to protect consumers from hazards and market failures. In bad times, however, with other instruments constrained—like tariff hikes—or perceived to be politically visible—like contingent protection—the high obfuscation and nuisance power of NTMs makes them tempting instruments to protect non-performing producers on demand or even to make up for uncompetitive exchange rates and other macroeconomic distortions. In the current climate of macroeconomic and political

---

12 In some sectors, switching production processes to accommodate different standards is costly. For instance, accommodating different maximum residual levels of toxic chemicals on different production runs in the same facility can be tricky. In such cases, relaxing technical regulations for exports to certain destinations may do no good. Only very close collaboration between competent, technically-trained regulatory bodies and technical industry representatives may yield real benefits.
uncertainty, it is thus crucial to frame the NTM-setting process in a way that ensures good governance and limits the scope for hijacking.

5.1 Streamlining NTMs: A policy agenda

Streamlining NTMs in the MNA region should not be thought of as a search for quick wins to reduce trade costs by a few percentage points, because the factual analysis presented in this note suggests that, with some exceptions, the stakes on that front alone may not be that high. Instead, streamlining NTMs should be viewed in a more ambitious way, as an entry door to a wide-ranging regulatory-improvement agenda whose real aim is to put in place good-governance and dialogue practices at the heart of government action. In a context of newly-established democracy, such an agenda—in the area of regulatory governance as in other ones—is key to ensure that the democratic process does not remain confined to shallow electioneering, but instead goes deep into government action.

Practically, NTM streamlining involves two tasks:

1. Reviewing existing measures with the aim of eliminating the most inefficient ones on the basis of careful cost-benefit analyses;

2. Putting in place effective good-governance structures for new ones.

Which of the two processes comes first depends on local demand. In some countries, current NTMs are a “legacy cost” and streamlining them is a priority. In a context of political change, getting rid of measures put in place by previous governments may have political traction. On the other hand, once measures are in place, they generate rents and lobbies form endogenously to defend them, making reform more difficult than ex ante.

Putting in place good-governance structures to manage, ex ante, the flow of new NTMs can be based on blueprints that have been tried elsewhere, essentially based on the concept of “regulatory impact assessment” (RIA). Two types of challenges are involved. The first is institutional—to get different agencies to coordinate around a complex process based on transparency and economic rationality. The second is analytical—a RIA is a difficult exercise requiring capabilities that are unlikely to be readily available in MNA administrations. The “RIA industry” (a galaxy of consulting firms, international organizations and donors advising governments on RIA) has approached the capability issue by watering down the analytics to the point where administrations are only expected to check lists of boxes, sometimes resulting in exercises that are, by the industry’s own recognition, largely useless.

There is a way out of this conundrum. In both cases (ex-post review and ex-ante RIA) what is needed is a strong, full-hearted training and capacity-building effort. The World Bank has recently issued an NTM streamlining toolkit (Cadot, Malouche and Saez 2012) predicated on the notion that precise, targeted technical assistance can make meaningful NTM analysis possible even when capabilities are initially low. The World Bank’s approach is meant to ensure that the regulatory-review process, whether ex-ante or ex-post, does not produce, out of a desire to keep things simple and quick, systematically biased results focused exclusively on the reduction of business costs at the expense of local public goods.

In the medium term, in the spirit of the ambitious approach just outlined, the objective of capacity-building assistance should be to form, in every country, a small cadre of highly competent and
reform-minded “technocrats” capable of driving a reform process when the political will is there. International experience (see e.g. Haddou forthcoming) shows that in countries that have successfully reformed, two key ingredients were (i) a strong top-down political drive, and (ii) the existence of a small group of technocrats managing the reform with a clear vision. Right now, none of these conditions is met in MNA countries. Outside assistance cannot replace political drive which has to be homegrown, but it can help putting in place conditions in which a drive, when it appears, translates into practical implementation. This is particularly important in MNA countries where numerous reform efforts got bogged down in the past, not just because they were half-hearted to start with, but also because there was no buy-in in the administrations.

Last but not least, the existence of groups of like-minded technocrats capable of implementing reforms on the ground in several MNA countries may be the most effective way of fostering regional integration. International experience in the E.U. and, to some extent, in MERCOSUR suggests that one of the key elements needed for progress in regional integration is informal cooperation at the technical level, sometimes below the radar screen of politicians. In ASEAN as well, anecdotal evidence suggests that many problems get solved at the technical level through informal phone calls before they have a chance to ratchet up to the political level where trade-offs become complex. Such kind of informal cooperation is facilitated if technical personnel in the region’s member states shares a common vision acquired during common training.

### 5.2 A prioritized road map

The considerations above suggest a clear agenda for action at the level of both MNA countries and G8 countries.

In the short run, MNA countries should

- Put in place structures to monitor NTMs and update, publish and analyze data;
- Use these structure as fora for permanent dialogue with the private sector on a broad set of competitiveness-related issues, including NTMs and “doing business”, and consolidate existing initiatives in this area running in parallel.

In the medium run, MNA countries should

- Endow these structures with clearly defined mandates, budget resources and analytical capabilities to conduct reviews of existing and new NTMs, possibly in collaboration with universities and think tanks;
- Put in place arbitrage structures to make binding decisions on regulatory changes in conformity with the results of analytical assessments.

G8 countries should help the process throughout with a strong, ambitious program of capacity building targeting the whole MNA region. In the short run, G8 countries should

- Provide technical and financial assistance to NTM-review structures;
- Help MNA countries attract young economics graduates for key positions in the regulatory review process.

In the medium run, G8 countries should
Help MNA countries put in place strong supervisory bodies covering key areas of economic governance, including (i) trade-related and business regulation; (ii) competition policy, and (iii) government procurement.

These three areas are deeply inter-related and form together a nexus of issues whose analysis draws on the same type of competencies (law, industrial economics and trade), and where the stakes in terms of improving governance and market access are very high for both MNA and G8 countries.
References


EAC/EABC (2007), Monitoring mechanism for elimination of Non-tariff barriers in EAC; mimeo.


Imani Development (2009), Non-tariff barrier impact study for COMESA region; mimeo.


OECD (2004), Mexico: Progress in Implementing Regulatory Reform; Paris: OECD.


— (2008b), Non-tariff measures on goods trade in the EAC; Report #45708-AFR.


Appendix: AVE estimation

Our estimation strategy is a simple treatment-effect approach where prices are “treated” by NTMs. The corresponding difference-in-difference (DID) equation is

$$\ln \left( a_{ik} \right) = \alpha_0 + \alpha_1 \ln \left( 1 + t_{ik} \right) + \sum_{j=A}^{E} \beta_j c_{ijk} + \sum_{i \in MNA} \sum_{j=A}^{E} \gamma_j \left( c_{ijk} \times \delta_i \right) + \delta_i + \delta_k + u_{ik} \tag{1}$$

where $\ln \left( a_{ik} \right)$ is the log of the price gap observed between country $i$ and the average of all 30 countries in the sample for product $k$; $\ln \left( 1 + t_{ik} \right)$ is the log of one plus the tariff, in ad-valorem form, imposed by country $i$ on product $k$; $c_{ijk}$ is the coverage ratio, in country $i$, of NTM type $j$ ($j = A-E$ using the MAST nomenclature) on product $k$, $\delta_i$ is a country fixed effect, and $\delta_k$ is a product fixed effect. Product effects control for market-structure differences across products which could account for systematic differences in the cross-country dispersion of prices. Country effects control for systematic cost-of-living differences across countries. The data consists of 1’260 product-country pairs treated as a panel.

AVE can be retrieved algebraically as follows. Suppose that there is only one NTM, of type A, and that $c_{ijk} = 1$. Then

$$\ln \left( \hat{a}_{ik} \right) \Big|_{c_{ik}=1} = \hat{\alpha}_0 + \hat{\alpha}_1 \ln \left( 1 + t_{ik} \right) + \hat{\beta}_A + \hat{\gamma}_A I_i + \delta_i + \delta_k \tag{2}$$

Suppose now that $c_{ijk} = 0$. Then

$$\ln \left( \hat{a}_{ik} \right) \Big|_{c_{ik}=0} = \hat{\alpha}_0 + \hat{\alpha}_1 \ln \left( 1 + t_{ik} \right) + \delta_i + \delta_k. \tag{3}$$

It follows that

$$\ln \left( \hat{a}_{ik} \right) \Big|_{c_{ik}=1} - \ln \left( \hat{a}_{ik} \right) \Big|_{c_{ik}=0} = \ln \left( \frac{\hat{a}_{ik} \Big|_{c_{ik}=1}}{\hat{a}_{ik} \Big|_{c_{ik}=0}} \right) = \hat{\beta}_A + \hat{\gamma}_A I_i \tag{4}$$

So

$$\frac{\hat{a}_{ik} \Big|_{c_{ik}=1}}{\hat{a}_{ik} \Big|_{c_{ik}=0}} = e^{\hat{\beta}_A + \hat{\gamma}_A I_i} \tag{5}$$

or

$$\hat{a}_{ik} \Big|_{c_{ik}=1} = \mu_{ik} e^{\hat{\beta}_A + \hat{\gamma}_A I_i} \tag{6}$$

where

$$\mu_{ik} = \exp \left[ \hat{\alpha}_0 + \hat{\alpha}_1 \ln \left( 1 + t_{ik} \right) + \delta_i + \delta_k \right] \tag{7}$$

Expression (6) gives the rise in the price of good $k$ generated by a coverage ratio going from zero to one, as would be the case if NTMs were applied to products at the level at which the estimation is carried out. However, our unit of observation is an ICP product, which is an aggregate of HS6 products. As a result, our coverage ratios are in between zero and one, and AVEs must be “deflated” to take that into account. Thus, if aggregate product $k$ (defined using the ICP nomenclature) is covered by NTM type A with a coverage ratio of $c$, we set its AVE at
\[ \hat{a}_{ik} \hat{c}_{ik} = c \mu_{ik} e^{\hat{\beta}_{ik} + \hat{\gamma}_{ik}} \]  

Estimates of (8) are displayed by country in Tables A1 for Morocco and A2 for Tunisia. Interaction terms with other MNA countries were not statistically significant. They should be interpreted with the utmost caution, given that they are obtained by aggregating NTM coverage ratios up to the fairly aggregate level of ICP products, resulting in a loss of precision. They may also suffer from endogeneity bias, although the use of country and product effects controls for many possible omitted variables.
Table A1
Estimated AVEs by product and type of NTM, Morocco

<table>
<thead>
<tr>
<th>Product</th>
<th>ICP code</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>00110121</td>
<td>92.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>92.0</td>
</tr>
<tr>
<td>Mineral waters</td>
<td>00110122</td>
<td>50.2</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>50.2</td>
</tr>
<tr>
<td>Tobacco</td>
<td>00110220</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Household textiles</td>
<td>00110511</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Major household appliances whether electric or not</td>
<td>00110531</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Small electric household appliances</td>
<td>00110532</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Glassware</td>
<td>00110540</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Major tools and equipment</td>
<td>00110551</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Small tools and miscellaneous accessories</td>
<td>00110552</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Rice</td>
<td>01101111</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Other cereals and flour</td>
<td>01101112</td>
<td>86.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>86.1</td>
</tr>
<tr>
<td>Bread</td>
<td>01101113</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Other bakery products</td>
<td>01101114</td>
<td>75.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75.0</td>
</tr>
<tr>
<td>Pasta products</td>
<td>01101115</td>
<td>81.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>81.9</td>
</tr>
<tr>
<td>Beef and veal</td>
<td>01101121</td>
<td>67.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>67.1</td>
</tr>
<tr>
<td>Pork</td>
<td>01101122</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Lamb</td>
<td>01101123</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Poultry</td>
<td>01101124</td>
<td>32.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32.2</td>
</tr>
<tr>
<td>Other meats and preparations</td>
<td>01101125</td>
<td>89.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89.0</td>
</tr>
<tr>
<td>Fresh or frozen fish and seafood</td>
<td>01101131</td>
<td>68.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>68.4</td>
</tr>
<tr>
<td>Preserved fish and seafood</td>
<td>01101132</td>
<td>73.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>73.7</td>
</tr>
<tr>
<td>Fresh milk</td>
<td>01101141</td>
<td>64.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64.6</td>
</tr>
<tr>
<td>Preserved milk and milk products</td>
<td>01101142</td>
<td>51.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>51.4</td>
</tr>
<tr>
<td>Cheese</td>
<td>01101143</td>
<td>81.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>81.9</td>
</tr>
<tr>
<td>Eggs and egg-based products</td>
<td>01101144</td>
<td>56.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>56.1</td>
</tr>
<tr>
<td>Butter and margarine</td>
<td>01101151</td>
<td>27.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27.4</td>
</tr>
<tr>
<td>Other edible oils and fats</td>
<td>01101153</td>
<td>54.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54.9</td>
</tr>
<tr>
<td>Fresh or chilled fruit</td>
<td>01101161</td>
<td>22.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22.7</td>
</tr>
<tr>
<td>Frozen</td>
<td>01101162</td>
<td>81.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>81.9</td>
</tr>
<tr>
<td>Fresh or chilled vegetables</td>
<td>01101171</td>
<td>14.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.0</td>
</tr>
<tr>
<td>Fresh or chilled potatoes</td>
<td>01101172</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Frozen or preserved vegetables</td>
<td>01101173</td>
<td>36.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.2</td>
</tr>
<tr>
<td>Sugar</td>
<td>01101181</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Jams</td>
<td>01101182</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Confectionery</td>
<td>01101183</td>
<td>98.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98.0</td>
</tr>
<tr>
<td>Spirits</td>
<td>01102111</td>
<td>112.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112.3</td>
</tr>
<tr>
<td>Wine</td>
<td>01102121</td>
<td>64.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64.6</td>
</tr>
<tr>
<td>Beer</td>
<td>01102131</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Clothing materials and accessories</td>
<td>01103111</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Garments</td>
<td>01103121</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Footwear</td>
<td>01103211</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
</tbody>
</table>

Simple average: 54.0  4.1  62.6
Simple average (non-zero only): 76.3  57.0  87.6
Min: 0.0  0.0  0.0
Max: 112.3  123.6  374.7
St. Dev: 43.0  19.7  67.8
Median: 60.3  0.0  60.3
Table A2
Estimated AVEs by product and type of NTM, Tunisia

<table>
<thead>
<tr>
<th>Product</th>
<th>ICP code</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>00110121</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Mineral waters</td>
<td>00110122</td>
<td>4.4</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>4.4</td>
</tr>
<tr>
<td>Tobacco</td>
<td>00110220</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Furniture and furnishings</td>
<td>00110511</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Household textiles</td>
<td>00110520</td>
<td>26.7</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>26.7</td>
</tr>
<tr>
<td>Major household appliances whether electric</td>
<td>00110531</td>
<td>37.7</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>37.7</td>
</tr>
<tr>
<td>Small electric household appliances</td>
<td>00110532</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Glassware</td>
<td>00110540</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Major tools and equipment</td>
<td>00110551</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Small tools and miscellaneous accessories</td>
<td>00110552</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Rice</td>
<td>01101111</td>
<td>52.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>52.0</td>
</tr>
<tr>
<td>Other cereals and flour</td>
<td>01101112</td>
<td>20.5</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>20.5</td>
</tr>
<tr>
<td>Bread</td>
<td>01101113</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Other bakery products</td>
<td>01101114</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Pasta products</td>
<td>01101115</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Beef and veal</td>
<td>01101121</td>
<td>17.5</td>
<td>32.1</td>
<td></td>
<td></td>
<td></td>
<td>55.2</td>
</tr>
<tr>
<td>Pork</td>
<td>01101122</td>
<td>128.1</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>128.1</td>
</tr>
<tr>
<td>Lamb</td>
<td>01101123</td>
<td>0.0</td>
<td>105.2</td>
<td></td>
<td></td>
<td></td>
<td>105.2</td>
</tr>
<tr>
<td>Poultry</td>
<td>01101124</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Other meats and preparations</td>
<td>01101125</td>
<td>8.9</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>8.9</td>
</tr>
<tr>
<td>Fresh or frozen fish and seafood</td>
<td>01101131</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Preserved fish and seafood</td>
<td>01101132</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Fresh milk</td>
<td>01101141</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Preserved milk and milk products</td>
<td>01101142</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Cheese</td>
<td>01101143</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Eggs and egg-based products</td>
<td>01101144</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Butter and margarine</td>
<td>01101151</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Other edible oils and fats</td>
<td>01101153</td>
<td>20.5</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>20.5</td>
</tr>
<tr>
<td>Fresh or chilled fruit</td>
<td>01101161</td>
<td>0.0</td>
<td>49.2</td>
<td></td>
<td></td>
<td></td>
<td>49.2</td>
</tr>
<tr>
<td>Frozen</td>
<td>01101162</td>
<td>0.0</td>
<td>20.2</td>
<td></td>
<td></td>
<td></td>
<td>20.2</td>
</tr>
<tr>
<td>Fresh or chilled vegetables</td>
<td>01101171</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Fresh or chilled potatoes</td>
<td>01101172</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Frozen or preserved vegetables</td>
<td>01101173</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Sugar</td>
<td>01101181</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Jams</td>
<td>01101182</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Confectionery</td>
<td>01101183</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Spirits</td>
<td>01102111</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Wine</td>
<td>01102121</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Beer</td>
<td>01102131</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Clothing materials and accessories</td>
<td>01103111</td>
<td>0.9</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0.9</td>
</tr>
<tr>
<td>Garments</td>
<td>01103121</td>
<td>6.1</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>6.1</td>
</tr>
<tr>
<td>Footwear</td>
<td>01103211</td>
<td>25.6</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>25.6</td>
</tr>
</tbody>
</table>

Simple average: 8.3, 4.9, 13.4
Simple average (non-zero only): 29.1, 51.7, 37.4
Min: 0.0, 0.0, 0.0
Max: 128.1, 105.2, 128.1
St. Dev: 22.2, 18.4, 28.1
Median: 0.0, 0.0, 0.0